



HELSINKI UNIVERSITY OF TECHNOLOGY
FACULTY OF ELECTRONICS, COMMUNICATIONS AND AUTOMATION

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**DEVELOPING CORPORATE KNOWLEDGE MANAGEMENT
THROUGH SOCIAL MEDIA**

Master's Thesis submitted in partial fulfillment of the requirements for the degree of
Master of Science in Engineering

Espoo, November 21, 2008

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HELSINKI UNIVERSITY OF TECHNOLOGY Abstract of the Master's Thesis

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Name of the Thesis: Developing Corporate Knowledge Management through Social Media Date: November 21, 2008	Number of pages: 94+21
Faculty: Faculty of Electronics, Communications and Automation Professorship: S-72 Communications Technology	
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<p>Abstract:</p> <p>Knowledge Management is the organizational process of gathering, organizing, analyzing and sharing knowledge. The meaning of corporate Knowledge Management is to create a working environment in which employees are able to raise the level of their knowledge and may make the use of this knowledge more effective and productive.</p> <p>Social Media refers to collaboratively produced and shared media content. Social Media has two aspects – technology and mindsets. Technology points to the wide variety of Web 2.0 applications and tools. Social Media mindsets refer to a new way of handling and managing knowledge. Mindsets contain open communication, shared decision making, interactivity, collectivity, collaboration, free sharing and usage of knowledge that is assisted by the use of Social Media technology.</p> <p>The target of this Master's thesis is to define how corporate Knowledge Management can be developed through Social Media utilization. The analysis material comes from the case organization Fidenta. Knowledge Management of the case organization is evaluated especially from the point of view of knowledge sharing, communication and innovations management. Social Media potentials are researched to identify applicable solutions for the case organization.</p> <p>According to the results of this thesis, Social Media use has a big impact on the development of Knowledge Management. Systematic and controllable Social Media utilization makes possible a more effective communication and more versatile use of knowledge. Social Media also creates new possibilities for the emergence and processing of innovations that combine employees and their knowledge.</p>	
<p>Keywords:</p> <p>Best practices, Quality Management, ICT, Innovation, Intranet, Knowledge Management, Social Media, Usability</p>	

TEKNILLINEN KORKEAKOULU Diplomityön tiivistelmä

Tekijä: Petra Sääntti	
Työn nimi: Sosiaalinen media yrityksen tietojohdamisessa Päivämäärä: 21. marraskuuta 2008	Sivumäärä: 94+21
Osasto: Elektroniikan, tietoliikenteen ja automaation tiedekunta Professuuri: S-72 Tietoliikennetekniikka	
Työn valvoja: Dosentti Timo Korhonen Työn ohjaaja: Diplomi-insinööri Jaakko Vilen	
<p>Tiivistelmäteksti:</p> <p>Tietojohdaminen on organisaation prosessi, joka keskittyy tiedon keräämiseen, organisointiin, analysointiin ja jakamiseen. Yrityksen tietojohdamisen tarkoitus on luoda työympäristö, jossa työntekijät pystyvät kasvattamaan omaa tietouttaan ja käyttämään sitä tehokkaasti ja tuottavasti yrityksen kannalta.</p> <p>Tässä työssä sosiaalisella mediallyä tarkoitetaan erityisesti yhteisöllisesti tuotettua ja jaettua mediasisältöä. Sosiaalisella mediallyä on kaksi puolta – teknologia ja ajatusmaailma. Teknologia käsittää laajan valikoiman Web 2.0 sovelluksia ja työkaluja. Sosiaalisen median ajatusmaailma viittaa uuteen tapaan käsitellä tietoa. Ajatusmaailmassa korostuvat avoin kommunikaatio, jaetun päätäntävalta, vuorovaikutteisuus, yhteisöllisyys, yhteistyö ja tiedon vapaa jakaminen ja käyttäminen, joita edesauttaa sosiaalisen median teknologian käyttö.</p> <p>Tämän diplomityön tavoite on selvittää, miten yrityksen tietojohdamista voidaan kehittää sosiaalisella mediallyä keskittyen erityisesti yrityksen sisäiseen tiedon jakamiseen, kommunikaatioon ja innovaatiohallintaan. Yrityksen tietojohdamista ja sosiaalisen median mahdollisuuksia tutkitaan kohdeyritys Fidentassa.</p> <p>Diplomityössä havaitaan, että sosiaalisen median merkitys on suuri tietojohdamisen toimivuuden parantamisessa. Sosiaalisen median suunnitelmallinen ja hallittu käyttö mahdollistaa tehokkaamman kommunikoinnin ja tiedon monipuolisemman käytön. Sosiaalinen media luo myös uusia, kaikki työntekijät ja heidän tiedon yhdistäviä mahdollisuuksia innovaatioiden syntymiseen ja käsittelyyn.</p>	
Avainsanat: innovaatio, intranet, käytettävyys, laatujohtaminen, parhaat käytännöt, sosiaalinen media, tieto- ja viestintäteknologia, tietojohdaminen	

Acknowledgements

I wish to express my gratitude to Maarit Kaasinen and Jyrki Nieminen for giving me the opportunity to evaluate and develop the Knowledge Management of the case organization Fidenta through Social Media. The possibility to examine Social Media potentials and the possibility to witness the solution piloting and implementation has been an exhilarating and rewarding experience.

Additional thanks go to the supervisor of this thesis, Docent Timo Korhonen and to my instructor in Fidenta, Jaakko Vilen, for their support. I have got valuable advice and inspiring ideas from both of you. I also wish to thank William Martin for revising the language of this thesis.

My special acknowledgements go to my father, Risto, for the valuable comments on my thesis and his help with finding the suitable literature and research materials. Gratitude is also offered to my mother, Kirsti, for her support and continuous interest in my thesis study. Finally, I would like to thank Ari for encouragement during my studies.

Espoo, November 21, 2008

Petra Sääntti

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Key Concepts

Best Practices

Best practices are methods, techniques, processes or activities that have consistently been shown to be more superior at delivering a particular outcome than any other method, technique, process or activity. The best practices of a company can be compared to those of another to find out better ways of acting and areas that need to be developed. (Juran 1986; Godfrey and Juran 1998)

Explicit Knowledge

Articulated knowledge, contained in manuals and procedures, expressed and recorded as words, numbers, codes or mathematical and scientific formulas. (Polanyi 1967; Nonaka and Takeuchi 1995) See also *tacit (implicit) knowledge*.

ICT

Information and Communication Technologies (ICT) are the computing and communication facilities and features that support managing and processing information. (Kent 2008)

Innovation

An innovation can be seen as introducing successfully something new and useful. This can be for example, introducing a new method, process, technique, practice, service or product. Some researchers like Fagerberg (2005) define an innovation as an attempt to carry an idea into practice. It might also be a new manner to perform an action in a better or different way that was used to execute the same action before. Innovations can be divided into radical (genuinely new) and incremental (upgradeable) innovations. (Leifer 2000; Ojala 2008)

Internet

Internet consists of a worldwide, publicly accessible set of interconnected computer networks that transmit data using the standardized protocols. It consists of millions of domestic, academic, business, and government networks and terminals, which together carry various information and services, such as electronic mail, online chat,

file transfer, and the interlinked Web pages and other resources of that also form the World Wide Web. The first phase of the Internet was called Web 1.0, the emerging Web 2.0 and the future semantic Internet is called Web 3.0. (Radiar networks and Nova Spivack 2007; Driver 2008; Tapscott and Williams 2008)

Intranet

Intranet is an organizational private network applying Internet applications and networking to securely share part of an organization's information or operations with its employees. Intranet should be protected from unauthorized access with security systems. Extranet is also an organizational network, but it usually has restrictions in openness for example, it is open only to owner companies or corporate customers. Extranets often contain a limited amount of the Intranet's information. (Nambisan 2000)

Knowledge

Knowledge is a mix of experiences, values, context related information and expert insights. In the mind of a knower, knowledge provides a framework for analyzing and adopting new experiences and *information*. Information is transferred to knowledge when it is put into action. Knowledge can be *explicit* or *tacit knowledge*. (Nonaka and Takeuchi 1995; Davenport and Prusak 1998)

Knowledge Management

Knowledge Management is the organizational process of gathering, organizing, analyzing and sharing knowledge to create an environment in which employees are able to raise the level of their individual knowledge and may make the use of this knowledge more effective and productive. (Alavia and Lediner 1999; Brelade and Harman 2001)

Knowledge Management Systems Life Cycle

A Knowledge Management systems life cycle (KMSLC) is a development model that describes the phases of planning and implementing a Knowledge Management system. (Awad and Ghaziri 2004)

Learning Organization

A learning organization has a climate that encourages employees, customers, suppliers and other stakeholders to learn and develop their full potential. A learning organization makes a human resource development strategy central to the business policy. (Pedler et al. 1989)

Quality

The quality of a product, service or process aims to achieve an output, result or process that satisfies a specific user, customer or organization's expectations or requirements. In this thesis the definition of quality is aiming at organizational excellence. This point of view is especially concentrated on the functioning of processes and the meeting of customer's expectations in production. (Juran 1986; Godfrey and Juran 1998)

Quality Management

Quality Management refers to management activities and functions involved in determining quality policy and its implementation. According to Juran (1986) Quality Management is divided into quality control, quality planning and quality improvement. (Godfrey and Juran 1998)

Social Media

Social Media (also called social networking and web 2.0) refers to collaboratively produced and shared media content and to network communities. Users have a possibility to share their opinions, experiences and viewpoints. This facilitates creativity, open communication and sharing of knowledge among users. Wiki and discussion forums are examples of Social Media tools. (Linnake 2008; Ojala 2008; Tapscott and Williams 2008; WebProNews 2008)

Tacit Knowledge

Tacit (implicit) knowledge is learned by experience and communicated only indirectly, through metaphor and by analogy. It is hard to access, because it is unwritten, unspoken and hidden knowledge people carry in their minds. (Polanyi 1967; Nonaka and Takeuchi 1995)

Usability

Usability is defined as the extent to which a product can be used by a specific user to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. (International Organization for Standardization 2008; UsabilityNet 2008)

User Centered Design

User centered design is an interdisciplinary design approach that is based on usability of the design from the point of view of users. (UsabilityNet 2008)

Web 2.0

The terms Web 2.0 and *Social Media* are used to describe the next generation of the World Wide Web (WWW). Web 2.0 describes the transition to more interactive applications that are based on collaboratively produced and shared media content. (Linnake 2008; Ojala 2008; Tapscott and Williams 2008)

Abbreviations

CMMI	Capability Maturity Model Integration
EFQM	European Foundation for Quality Management
ICT	Information and Communications Technology
IS	Information System
ISO	International Organization for Standardization
KMSLC	Knowledge Management systems life cycle
OSS	Open Source Software
R&D	Resource and Development
RSS	Really Simple Syndication
Web	See WWW
WWW	World Wide Web (also called the Web)

1 Introduction

Traditionally the communication responsibility of an organization has been seen to be in the hands of corporate management. In practical matters a communication unit supports the management in defining what kind of information may and will be published in the company media; for example, on its Web pages. The centralized communication unit together with the management has been able to choose what information is published to the whole organization in the corporate Intranet and Extranet. Only a few select people from the organization have been involved in choosing how information is presented to the users, which pieces of information can be found easily and which communication tools are utilized in the whole company.

Beside corporate communication, the creation of business relevant innovations has often been dedicated to a particular group in an organization. This R&D group has alone been responsible for the emergence of business relevant innovations in the organizations. This kind of centralization of different corporate actions – like communication and innovation management – has not left much room for open communication or creativity overall in traditional organizations. According to Tapscott and Williams (2008) also productivity tools and applications (like Microsoft Office) have traditionally been planned on a single user who generates documents instead of a group of people making documents collaboratively together. The corporate mindset has also tended to be more towards limiting the spread of information, usually for reasons of business strategy. Communication and sharing of knowledge being limited to only a few organizational players made it also previously possible for the management to think that it could control, monitor and manage the communication and information flow.

Development of corporate Knowledge Management is an absolute necessity for an organization when it strives to be successful also in the future. Collectivity, interactivity, collaboration and shared decision making are factors that support the business success of future companies. To gain profit and overcome the competition with other companies a company must focus on its ways of communicating, sharing knowledge and innovating. Social Media use develops corporate actions by

improving communication possibilities, knowledge transfer and interactivity to a more mature level. Effectiveness of the corporate actions improves while employees are able to share their know-how and interact easily. Cost efficiency is improved because less time is used for solving the same problems many times. This improves competitiveness. Innovation capability is developed by better communication possibilities and interactivity between employees. (Godfrey and Juran 1998; Linnake 2008; Ojala 2008)

The information technology research company Gartner (Linnake 2008) states that Social Media is starting to be essential for companies. We are shifting from closed and hierarchical workplaces having strict employee relationships to more self-organized, interactive and collaborative human capital networks that gain and create new knowledge from inside and outside the firm. (Tapscott and Williams 2008) Social Media can be utilized to develop corporate attitudes towards collaboration, openness, shared decision making power and knowledge sharing instead of blocking the flow of knowledge. According to King and Majchrzak (2003) the tools used in an organization should offer more space for spontaneity and also the option to participate asynchronously. Social Media offers many possibilities to develop corporate actions if it is utilized in a structured way. A company should define suitable actions that can be developed through Social Media.

The use of Social Media is rapidly growing in the Internet, where utilization is becoming more social, interactive and collaborative. Employees are accustomed to everyday use of Social Media tools (e.g. instant messaging, wiki, blog, virtual world) in their free time. This is especially so when it comes to the younger generation of employees, i.e. those who have grown up with the Internet and learned to use it in their everyday life. This creates pressures within companies to start using these tools in everyday use outside the company also in working places. This is especially the case when the tools in use inside companies are not sufficient and developed enough to support fluent work communication. Social Media has penetrated everyday life outside work, and it will gradually come to be a part of both the internal and external activities of organizations.

Besides the many possibilities offered by Social Media, a company also faces challenges when starting to utilize Social Media. It must be able to choose the right tools for its actions and to find ways to encourage and motivate employees to use these tools. Social Media can also be utilized in an unproductive way – e.g. privacy and time-related threats must be taken into account before starting to implement and use new tools. The threats related to Social Media utilization should be defined and appropriate operational models found to effectively exploiting Social Media. (Linnake 2008)

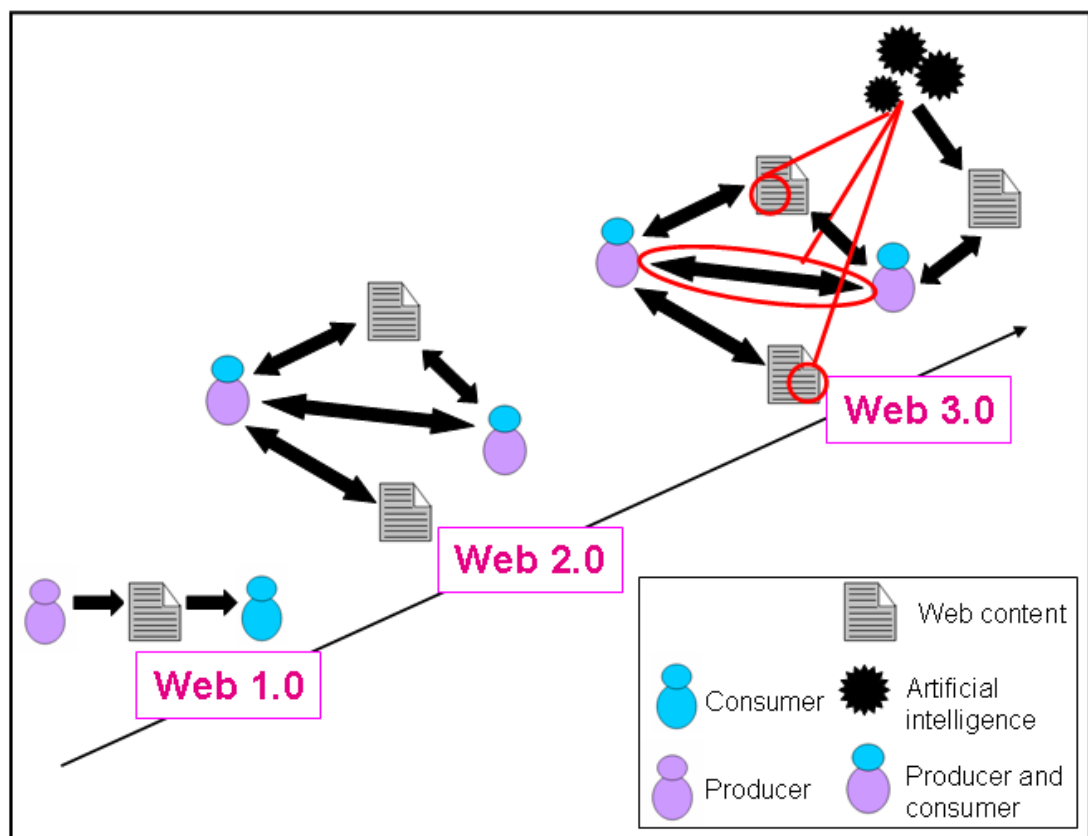


Figure 1. Communication in Web 1.0, 2.0 and 3.0 (Modified from Radar Networks and Nova Spivack 2007; Jones 2008; Martin 2008)

Figure 1 presents communication differences in the different phases of the World Wide Web (Web). The first phase of the Internet is called Web 1.0. It is characterized by published content that producers generate to Web pages and customers can read from the pages. The current Web 2.0 (Social Media) is based on user generated content, openness and content sharing. Every user of Web 2.0 Internet can act as a producer and a customer at the same time. Internet content can be

commented on, modified, developed further and discussed interactively with other users. Wikis, blogs, video pod castings, discussion forums, instant messaging, RSS and other Social Media tools have changed the way to act in the Internet. The future Internet is called Web 3.0. Predictions of Web 3.0 characteristics are platform independence, Internet content that is understandable by computer and three dimensional applications like virtual world SecondLife. Communication in Web 3.0 happens like in Web 2.0 but Internet content is also comprehended by computers. Computers are programmed to create new Internet content (e.g. media content, information bases, etc.) by following documents, discussions and other information about similar subjects. (Ojala 2008; Radar Networks and Nova Spivack 2008; Tapscott and Williams 2008)

1.1 Objectives

The target of this Master's thesis is to define how corporate Knowledge Management can be developed through Social Media utilization. Knowledge Management is the organizational process of gathering, organizing, analyzing and sharing knowledge. Earlier research in the area has been taken into consideration for the theoretical starting point of this Master's investigation. The analysis material of this study comes from the case organization Fidenta. Fidenta is an ICT organization owned by TietoEnator and Nordea, providing system development, integration, application service management and consulting services to Nordea. Fidenta's core know-how is in the banking systems and is based on a long and close customer relationship with Nordea. (TietoEnator 2008)

The research questions of this study in developing corporate Knowledge Management are:

- How to utilize common explicit and tacit knowledge more effectively?
- How to develop internal work tasks targeted communication?
- How to boost the emergence of innovations?

Social Media potentials are researched in the target organization's Intranet to find solutions to the research questions set identified above.

1.2 Structure of this thesis

This chapter will outline the overall structure of the study and the theoretical approach to this Master's thesis. As the starting point a definition of the features of an intelligent organization has been selected and the three most important features have been picked out from the point of view of the research interest. This selection is based upon the overall understanding of the topic obtained from both theoretical literature and empirical observations and findings.

An intelligent organization has got an ability to anticipate changes, learn fast and possesses ability for continuous renewal. An intelligent organization is able to utilize different kind of knowledge existing in an organization in order to enhance performance. It is also a learning organization that is capable of acquiring, organizing and sharing knowledge. (Choo 2002; Sydänmaanlakka 2002)

The criteria of an intelligent organization (Choo 2002; Sydänmaanlakka 2002) are presented in the following list:

1. Clear vision and strategy
2. Organization that supports renewal
3. Culture and values
4. Ideology of continuous improvement
5. Human Resource Management
6. Clear processes
7. Managing of execution
8. Learning Management
9. Knowledge Management
10. Team Management
11. Feedback Systems
12. Technology utilization
13. Way of leading (participative, self-managing)
14. Ability to renew and anticipate changes

The theoretical structure I have selected to be the approach to this Master's thesis examines organizational processes and actions from the point of view of three of the criteria of an intelligent organization (underlined in the list above); Knowledge Management, the ideology of continuous improvement (called Quality Management in this thesis) and technology utilization.

The theoretical framework of the Master's thesis is presented in Figure 2. The framework consists of three areas of focus representing theoretical points of view towards the interests of this thesis; (1) *Knowledge Management*, (2) *Quality Management* and (3) *Technology Utilization*. The theoretical background behind Figure 2 is presented in detail in Chapters 2 – 4.

1. Knowledge Management - being the key focus of this study - naturally needs to be included. The viewpoint of Knowledge Management is important because Knowledge Management contains the areas that are developed in this thesis; knowledge distribution, work communication and the corporate ability to innovate. (Chapter 3)
2. A quality Management approach is needed to create a process of developing Knowledge Management. (Juran 1986) A quality planning roadmap will help to build this process. Besides finding out appropriate Social Media tool possibilities, the development of Knowledge Management through Social Media concentrates also on the corporate attitude change that is needed to improve the managing of knowledge. Quality Management is also relevant when defining what to improve in Knowledge Management and whether the development effort has been successful or not. (Chapter 2)
3. The Technology Utilization view point is relevant while the focus of this thesis is on examining Knowledge Management development possibilities through Social Media. Social Media utilization refers to defining most suitable Social Media tools that should be used in the company as well as defining the operational models; how to start using these tools and how to change the current ways of acting. (Chapter 4).

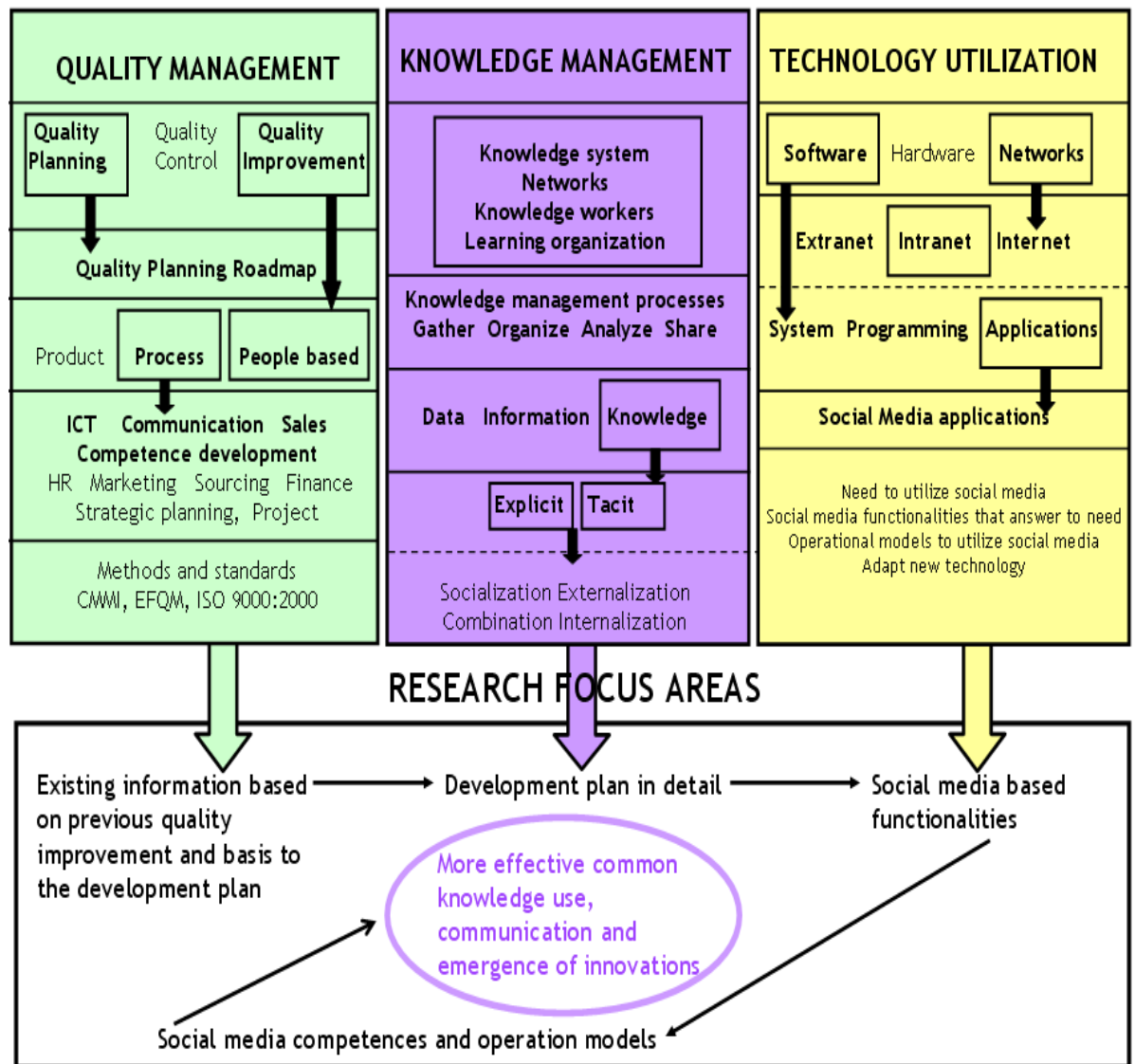


Figure 2. The theoretical framework for this Master's thesis: Developing corporate Knowledge Management through Social Media

In this Thesis, Knowledge Management in an organization is divided into knowledge system, networks, knowledge workers, processes and learning organization. This division is based on the views of Liebowitz (2005) and Earl (1997) that are presented in detail in the chapter "Knowledge Management". In Figure 2, knowledge workers refer to the employees of an organization. Employees all produce, use, process and manage knowledge in one way or another. The processes needed for managing knowledge are capturing, organizing, analyzing and sharing. Technology utilization (knowledge system and networks) is an important concept of Knowledge Management because it is required for managing knowledge.

A learning organization is an important part of managing knowledge because knowledge can be freely discussed and collaboratively developed if the organizational culture is flexible and wisely applied. A productive organizational culture ensures that knowledge can be openly shared and discussed among employees. The Knowledge Management framework (Liebowitz 2005) differentiates data, information and knowledge from each other. The differences between data, information and knowledge are presented in Chapter 3 as well as division of knowledge to explicit and tacit knowledge. (Earl 1997; Liebowitz 2005)

In the research framework (Figure 2) Quality Management is divided according to Juran's (1986) quality trilogy into quality planning, quality control and quality improvement. (Figure 3) *Quality planning* is a structured process that should be utilized to develop processes while aiming at quality improvement. *Quality control* is a process of measuring the actual performance of processes and comparing them to the goals set. *Quality improvement* means that the organization tries to reach early unattainable levels of organizational actions. (Godfrey and Juran 1998) This thesis concentrates on quality planning and quality improvement. Quality can be improved from a product, process or people based point of view. In this thesis only the process and people based quality development is researched. Processes under investigation in this thesis are processes related to communication, competence development and the use of information and communication technologies (ICT). Quality methods that are discussed in the thesis are European Foundation for Quality Management (EFQM) excellence model and Capability Maturity Model Integration (CMMI) and standard ISO 9000:2000.

Technology Utilization can be classified as software, hardware and networks. Software and networks are in the frame of this research and the networks focused on in this research being internal networks of the company. The software perspective in this thesis is concentrated on Social Media applications. Social Media based applications offer the necessary functionalities to develop the managing of knowledge in the organization. The applications in this thesis are divided into knowledge capturing, evaluating, sharing, storing and presenting. (Jashapara 2004) Social Media refers to the information network, the content of which is produced together in a collaborative manner. The idea of utilizing Social Media in the organization is improving the per-

sonnel's possibilities to share their opinions, experiences and viewpoints. This develops the managing of knowledge from the perspective of knowledge distribution, communication and the emergence of business relevant innovations in the organization.

The structure of this thesis consists of three theory chapters presenting each theoretical point of view of this research. These theory chapters are followed by the empirical chapters of the thesis which are based on the Knowledge Management development project made in the case organization Fidenta. The final result in the picture – *more effective common knowledge use, communication and emergence of innovations* – could be continued with an arrow that would lead back to quality control at the beginning of the research process. In practice the quality of the research results is evaluated in the target organization. This quality control and further actions in the organization according to the quality control is not part of this thesis and is therefore removed from Figure 2.

The processes and methods of the Development Project are first presented in Chapter 5. They are followed by a detailed description of the Development Project activities in Chapter 6. To sum up and conclude the thesis, the collected results and progress made are presented in the Chapter 7. The results and findings of this thesis are evaluated compared to the theory and previous research and discussed in Chapters 8.

1.3 Author's contribution

This chapter describes author's contribution towards the research of this thesis. Social Media is a considerably new concept of investigation and especially in regard to Intranet. Many companies are only just starting to realize and probe the possibilities of Social Media. The idea of combining Knowledge Management development and Quality Planning to the utilization of Social Media forms my own contribution to this research. I created the theoretical framework of this Master's thesis when the purpose of utilizing Social Media in the target organization was first defined in cooperation with the target organization's management. The *Knowledge Management development process* (Figure 12) used in this thesis is also my own creation, modified from the hybrid life cycle of Awad and Ghaziri (2004) according to the demands of this

research. Social Media use and the aspects from the *quality planning roadmap* were added to the hybrid life cycle and the implementation phase was removed from that.

I acted as a project manager in the target organization's project that developed Knowledge Management through Social Media according to the *Knowledge Management development process* devised by me. The project group consisted of seven persons including myself. The group was formed from employees of different ages from various work assignments and business units. The idea of the group was to represent the employees of the company. The group members helped to perform some methods that were used in this project and participated in the brainstorming sessions based on the results that I gathered together from various researches. The project group also evaluated the results collected and gave feedback about possible improvements.

The idea of researching Knowledge Management in the target organization through user centered methods is untypical. The reasons for choosing these methods are presented in Chapter 5. The results of this thesis helped the target organization to start utilizing new Social Media possibilities. New communication, knowledge sharing and idea generation solutions and mindsets will develop the openness and participation possibilities of employees to a more mature level. The solutions that are suggested in this research make incremental changes to the Knowledge Management practices of the target organization if they are implemented.

2 Quality Management

The topic of this thesis is approached from three theoretical points of view; *Quality Management*, *Knowledge Management* and *Technology Utilization*. (Figure 2) This chapter focuses on Quality Management, and especially quality planning and the relevance of improving quality in organizations. Methods of quality control used in the target organization, quality standard ISO 9000:2000, European Foundation for Quality Management (EFQM) excellence model and Capability Maturity Model Integration (CMMI) are also described in this chapter.

2.1 Relevance of improving quality

According to Deming (2000) the relevance of improving quality lies in lower costs, a better competitive position, satisfied employees and more jobs. Quality also enables better products and better services. Deming (2000) explains that improving quality also reduces the amount of unproductive working hours and speeds up the production process. Costs are decreased because of less rework that has to be made and better use of materials. A better competitive position is a consequence of lower costs and better quality due to fewer errors and delays. Employees are more satisfied with their work when the processes are effective and clear and minimal rework needs to be completed. Because of a better position in the market and better quality, a company will be able to stay in business longer and this provides additional employment opportunities. (Deming 2000)

Godfrey and Juran (1998) state that the purpose of improving quality is to reduce and eliminate the chronic waste of the target processes. Chronic waste is the cost of poor quality that might exist in any process. (Figure 3) The reason for it may lie, for example, in ineffective processes or in errors or deficiencies in the planning. Getting rid of chronic waste enables better processes, products or services and more effective production. Cost efficiency rises because less time is used for solving the same problem many times, thus improving competitiveness. (Godfrey and Juran 1998)

According to Bauer et al. (2006) high corporate quality affects all employees, the organization itself, the organization's stakeholders, customers, suppliers and even the wider community. Employees involved in producing high quality products or services are satisfied because of the strengthened security of their position, less frustrating work as a result of mature processes, positive organizational culture and possibly higher wages. The organization benefits from the positive culture by employees that are more likely to stay in the company. Business is also more profitable because of high quality products or services that sell better and mature processes with fewer errors, deficiencies or rework needed.

Customer satisfaction is also high as a result of products or services meeting the customer needs and expectations. Bauer et al. (2006) state that higher quality makes the customer's experience more pleasant than with lower quality products. Suppliers of a quality organization are content with high quality cooperation that benefits both parties. Communities and even societies as a whole benefit from high quality organizations because of successful employees, organizations and suppliers that lead to a greater amount of jobs, people moving to the area, more services needed and taxes collected. (Bauer et al. 2006)

2.2 Quality and its planning

According to Juran (1986) there are many definitions of quality. These definitions aim, for example, at excellence, value, conformity to requirements or specifications, fitness for use, loss avoidance and meeting customers' expectations. According to Lillrank (2003) quality can be technical or interactive. The definition of technical quality is based on product correctness and interactive quality means the quality of a deliverable that is based on cooperation between the producer and consumer. (Lillrank 2003) Godfrey and Juran (1998) discuss the many meanings of quality. For the managing quality there are two important definitions: quality as the features of products and quality as freedom from deficiencies. The features of products refer to meeting user needs and providing user satisfaction. The main idea is to increase income by increasing the level of customer satisfaction. Freedom from deficiencies instead sees quality as a diminished amount of errors, failures, claims and customer dissatisfaction. In this thesis the definition of quality aims at excellence. This point of

views is especially concentrated on the functioning of processes and meeting customer's expectations in production.

Quality improvements can focus on product correctness, process functioning or have a people-oriented perspective. Knowledge Management development is related to process and people-oriented quality improvement. Processes that have not reached the CMMI target levels or fulfilled the EFQM criteria need to be improved. Processes can be divided into core and support processes. Core processes concentrate on making business in the organization while support processes prop up business making by supporting the functioning of the core processes. Knowledge Management development should improve the functioning of core business and support processes should be able to support work in a better way than before. Both types of processes are investigated if they are related to the development of Knowledge Management. The People-oriented viewpoint is important because process development only happens when employees have approved the new ways to act at work. (Juran 1986; Viitala 2005; Ojala 2008)

Quality Management refers to management activities and functions involved in the determination of a quality policy and its implementation. Juran (1986) defines that Quality Management is an overall term that includes all quality functions. According to Juran's (1986) quality trilogy, the managing of quality consists of three quality-oriented processes which are quality planning, quality control and quality improvement. (Figure 3) Developing Knowledge Management concentrates on quality planning and quality improvement. According to Juran (1986), *quality planning* means creating a process that will meet the established goals under operating conditions – e.g. creating a process of developing the quality of Knowledge Management. *Quality improvement* in the managing of knowledge in the target organization is the aim of this thesis and refers to overtaking unattainable levels of performance of the improved actions. *Quality control* is the process of measuring the actual performance of operations and comparing it to the appointed goals. The quality control process is also related to this thesis, because previous quality measurements in the target organization provided input for the demand to develop Knowledge Management. (Juran 1986, Gibbons 1994; Godfrey and Juran 1998)

The Quality trilogy diagram (Figure 3) describes how quality planning, quality control and quality improvement are related to each other. (Juran 1986) Together these three processes build a systematic approach that enable the improving of quality in organizations. Godfrey and Juran 1998 state that significant quality management breakthroughs need to be well planned and systematically executed to gain the desired results.

Developing quality starts with quality planning, a process, which includes identifying users, defining their needs, developing product features to meet the user needs, developing processes to produce these features and transferring the process to the operational area. These stages can be described as a quality planning road map. Quality control follows the planning phase. It ensures that processes are running in optimal effectiveness and that the level of performance does not become worse than planned. (Juran 1986; Godfrey and Juran 1998)

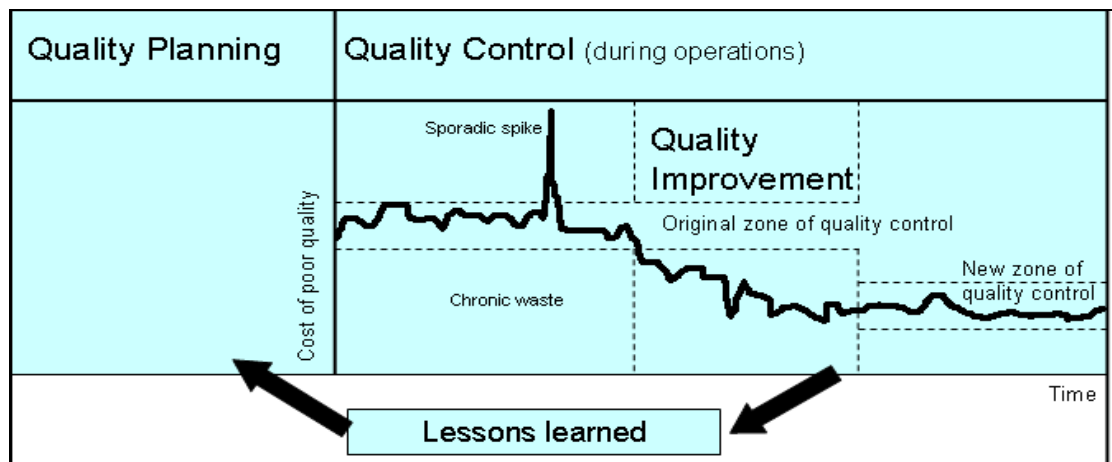


Figure 3. The Quality Trilogy diagram (Godfrey and Juran 1998)

Quality control includes evaluating actual performance, comparing it to the goals that have been set and also taking action in the event of any difference between the actual performance and the goal. In Figure 3 the *original zone of quality control* illustrates the goal. *Chronic waste* is the cost of poor quality that might exist in any process. The *Sporadic spike* represents sudden deviations from the planned performance, meaning that the amount of chronic waste rises. When the amount of waste rises, the cause of this deviation should be discovered and corrected. Afterwards the process

falls back to the original zone of quality control. (Juran 1986; Gibbons 1994; Godfrey and Juran 1998)

As presented in Figure 3, *quality improvement* follows the phase of *quality control*. The purpose of the quality improvement is to improve the target processes by reducing and eliminating chronic waste. This means identifying areas for improvement, executing the improvement and ensuring that the performed improvement is effective under the circumstances. As a result of successful quality improvement, the chronic waste level falls and the new level of quality control is defined. Also the lessons learned from the quality improvement are collected, documented and transferred to the following quality planning phase. (Juran 1986; Gibbons 1994; Godfrey and Juran 1998)

2.2.1 Quality planning roadmap

A *quality planning roadmap* describes the quality planning process. As described above, quality planning aims at meeting the established goals under operating conditions. It discovers user needs and opportunities for developing products, services and processes that will meet those needs and expectations and also to reduce the opportunities. (Juran 1986)

The quality planning roadmap (Juran 1986, Gibbons 1994; Godfrey and Juran 1998) has the following phases:

- Identify the users
- Determine user needs
- Develop product, service or process features to meet user needs
- Develop the existing processes to produce the defined product, service or process features
- Prove the process
- Transfer the process to the operational area.

Knowledge Management development should go through all these phases to make sure that the result of the development process is satisfactory. Identifying the user is significant that the development is targeted to the correct object. In the development

of corporate Knowledge Management the focus is on internal functions as the users are all corporate employees in different work assignments. Customers belong also to the target group because of the aim to meet customer expectations. Determining user need can be made through surveys, interviews, questionnaires or other tools that help to define their needs. The idea of Knowledge Management development is to get close to the user in the real working environment. Gibbons (1994) states that it is not only important to collect the needs, but also to put them into the language of the organization. When the user needs are defined, the features that meet these needs can be planned. In this phase the company's own goals should be considered to ensure that the planned features are also suited to the goals of the company. Features can be effectively produced with the help of a new process that also takes into account the new features. Proving the process happens by meeting the quality goals under the operational conditions. When the quality of the process is verified, it can be transferred to the operational area.

2.3 Methods of Quality measurement

Quality control is the process of measuring the actual performance of processes and comparing them to appointed goals. Quality measurement is important for a company to ensure that the quality of its actions is on a planned level and to make sure that they also stay on that level. These measurements offer information about development needs as well as about the strengths of the company. There exist many possible methods for measuring quality. The quality standard ISO 9000:2000, the European Foundation for Quality Management (EFQM) excellence model and the Capability Maturity Model Integration (CMMI) are presented below because they are used to measure quality in the target organization of this research.

ISO 9000:2000 is a quality standard that is used to improve organizational performance and achieve success. This standard defines quality as a combination of product, system or process characteristics that fulfill the requirements of customer or other interested parties. ISO 9000:2000 includes the fundamentals, definitions and vocabulary of a quality management system. ISO 9000:2000 is based on quality principles. These principles are intended for the use of the whole organization to ensure that the

organization is shifting towards improved performance. (International Organization for Standardization)

The European Foundation for Quality Management (EFQM) excellence model is used to evaluate and develop organizational activity and profits as a whole. The model can be used together with the balanced scorecard. The model has got nine criteria which specify an organizations progress toward excellence. Four of the criteria are “results” (Performance Results, Customer Results, People Results and Society Results) and five of them are enablers (Leadership, Policy and Strategy, People, Partnerships and Resources, and Processes). Result criteria are concerned about achievements in an organization and enabler criteria cover organizational activities. Results are caused by enablers and feedback collected from the results help to develop enablers. Figure 4 presents the criteria of the EFQM excellence model, which can be used for a variety of purposes, for example, in project management, supplier management, visioning, strategy formulation and as self-assessment. (EFQM 2008; Laatukeskus 2008, QS News 2008)

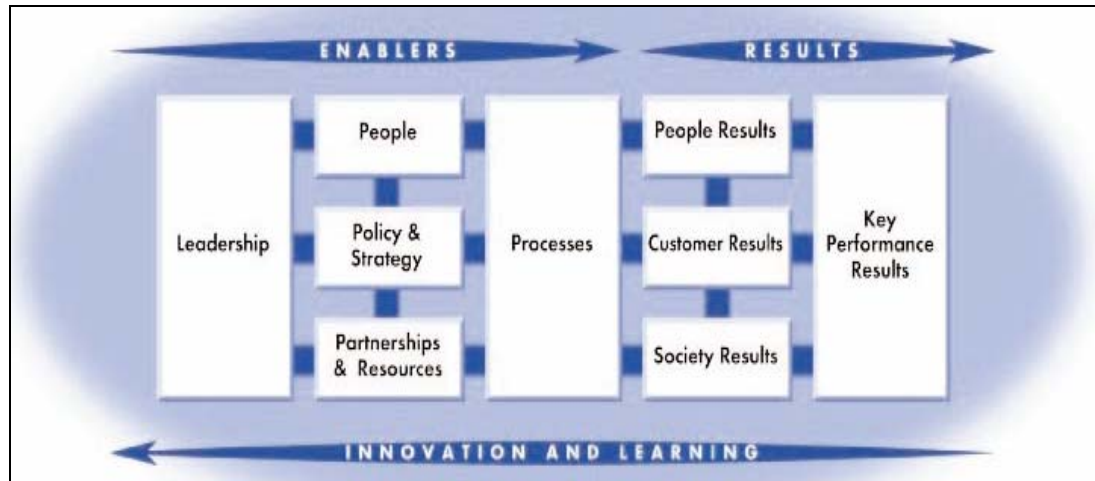


Figure 4. EFQM excellence model criteria (QS News 2008)

The Capability Maturity Model Integration (CMMI) is a model for product development. This model helps organizations to develop effective processes. CMMI defines 22 key process areas that should be included in product development and organizational practices. These processes are assembled based on the best practices of successful companies and are relevant for a company that wants to make sure its actions

are on a mature level. Each key process has been divided into five maturity levels. Organizational processes are compared to the key processes defined in CMMI. Based on this comparison, each organizational process gets its maturity level. The higher the level is the more mature is the process. Maturity levels of each process can be utilized to develop organizational processes to a higher maturity level. (Software Engineering Institute 2008) A company can set a target level for each process according to the importance of the process to the functioning of the whole company. CMMI measurements in an organization define which corporate processes reach the target level and which are not mature enough. Measurements find out the weaknesses of each process and this information can be used to develop processes further to reach the corporate target level.

3 Knowledge Management

The theoretical point of view when approaching Knowledge Management in this thesis is in the inspection of the role of organizational knowledge - how knowledge can be recognized, processed and managed. Here I discuss the relevance of developing corporate Knowledge Management, about knowledge and its management and about key components in developing Knowledge Management. The development of Knowledge Management is divided into knowledge capturing and sharing, knowledge related communication and into knowledge based innovation. These were also the main goals of the Development Project in the case organization that is presented in the experimental chapters of this thesis. Some examples about managing organizational knowledge are also presented here.

In this thesis Knowledge Management in an organization is divided into people, technology, processes and the learning organization as explained in the chapter “Structure of this thesis”. Aspects related to this division are examined in particular. The focus of the thesis concentrates on inter-company knowledge distribution and on communication in an interactive and collaborative manner. Finding new ways to utilize both explicit and tacit knowledge and improving internal work task targeted communication are important factors. Ways to develop the amount of initiatives made and the emergence of business relevant innovations are also included to the thesis focus. Operational models to effectively exploit Knowledge Management in the organization are examined because people and organizational culture have a massive impact on the development of Knowledge Management.

3.1 Relevance of managing knowledge

According to Liebowitz (2004) the strategic importance and value of Knowledge Management is such that organizations should take it as one of the key areas in their strategic management. If an organization is not able to recognize its own core knowledge and to manage it in order to be utilized by employees, it will face difficulties. These difficulties organizations face are, for example, unidentified but relevant knowledge gaps or losses of knowledge, reduction of effectiveness,

diminished amount of initiatives made by employees and a low rate of emergence of business relevant innovations. It is very probable that employees from different parts of the organization encounter the same challenges in problem solving and make the same mistakes many times over if the corporate knowledge cannot be recognized, processed and organized through organizational boundaries like projects, customer groups or business units. Such a state of affairs reduces the effectiveness of corporate actions because employees use their time reinventing the wheel. Using the time to solve the same challenges many times over also diminishes the amount of ideas and innovations emerging to common knowledge because employees are not able to share their knowledge and openly discuss about ideas, problems and challenges at the organizational level.

Project-based companies like the target organization of this research should pay specific attention to Knowledge Management because projects always need to be completed within a specific timeframe and cost structure. The finite nature of projects creates discontinuities in the flow of employees, knowledge and other resources from one project to the next. (Bresnen et al. 2005) A knowledge loss may occur if the knowledge of a project is not gathered and saved before the project is finished. Existing knowledge, for example, from project reviews, problems solved, risks arisen and solutions found need to be utilized in the project group and be offered to the use of the whole organization. Without the reuse and multi-use of knowledge or the ability to create new knowledge from existing solutions and experiences, project-based companies have to create solutions to every problem. (Love et al. 2005) This is inefficient both from the point of view of projects as well as from the organization. To manage knowledge properly between projects, an organization needs a Knowledge Management strategy that deals with projects beyond other things.

According to Ojala (2008) competent employees and especially high-class experts are becoming a scarce resource in the companies. She discusses that the shortage in the labor force is already preventing the growth of some companies. Organizations that have many employees retiring in the next years should also pay extra attention to the managing of their knowledge. Many such organizations will face a considerable knowledge loss in a few years time if they are not able to collect relevant existing

knowledge from employees leaving in time before they retire. Companies need ways to recognize the relevant knowledge and process and organize it for the future use of the company. Liebowitz (2005) states that Knowledge Management actions help capturing existing knowledge before it leaves the organization and creating new knowledge based on the existing knowledge.

3.2 Knowledge and its management

A Knowledge Management framework (Liebowitz 2005) differentiates *data*, *information* and *knowledge* from each other. *Data* refers to elements that can be detected, for example, to texts, facts, codes, images and sounds. According to Nonaka and Takeuchi (1995) data is transformed to *information* when it is processed or organized in some way. Davenport and Prusak (1998) describe information as a message. It has a sender and a receiver. According to them, information is meant to have an impact to receiver's judgment or behavior. They define information as data that makes a difference. Information is transferred to *knowledge* when it is adopted by Nonaka and Takeuchi (1995). A personal perspective to information transforms it to knowledge. According to Davenport and Prusak (1998) knowledge can be defined as a mix of experience, values, contextual information and expert insight. That helps to evaluate and incorporate new experiences and information. They state that organizational knowledge becomes embedded not only in documents or repositories but also in the routines of the organization as well as in processes, norms and practices.

Knowledge can be divided into *explicit* and *tacit knowledge*. (Nonaka and Takeuchi 1995) *Explicit knowledge* means articulated knowledge that can be expressed and recorded as words, numbers, codes or mathematical formulas. This type of knowledge is easy to communicate, store, and distribute. According to Nonaka and Takeuchi (1995) *tacit knowledge* instead is learned by experience and communicated only indirectly, through metaphor and analogy. Tacit knowledge is hard to access, because it is unwritten, unspoken and hidden knowledge people that carry in their minds. Because tacit knowledge is hard to formalize, it is also difficult to share it in the organization. (Polanyi 1967; Nonaka and Takeuchi 1995; Jashapara 2004; Liebowitz 2005)

Researchers have many definitions of what constitutes Knowledge Management. According to Brelade and Harman (2001) Knowledge Management means obtaining and using resources in order to create an environment in which individuals have access to information and in which individuals obtain, share and use this information to raise the level of their knowledge. Alavia and Lediner (1999) define Knowledge Management as an organizational process for gathering, organizing, analyzing and sharing both, the tacit and explicit knowledge of the employee so that other employees may make use of this knowledge to be more effective and productive. This Knowledge Management development follows both of these definition presented. Knowledge Management is seen as an organizational process of capturing, organizing, analyzing and sharing of knowledge to create an environment in which employees are able to raise the level of their knowledge and may make the use of this knowledge to be more effective and productive.

3.3 Key components in developing Knowledge Management

The major components of developing Knowledge Management are people, processes/culture and technology. (Liebowitz 2005) *Technology* is needed to enable communication and to share the knowledge between employees. *People* are the producers and users that manage the knowledge. *The right culture and processes* are needed to make the managing of knowledge a part of daily working routine. According to Earl (1997) Knowledge Management is divided similarly into knowledge system, networks, knowledge workers and learning organization. By *knowledge system* Earl refers to databases, decision tools and capture systems that contain information. *Networks* are important for knowledge capture, knowledge-building and sharing. A *knowledge worker* refers to people that have the needed skills for knowledge processing and analyzing. According to Earl (1997), knowledge is maximized if the organization can learn and that is why he defines the *learning organization* as part of Knowledge Management. In general most researcher agree with Liebowitz (2005) and Earl (1997) that the managing of knowledge has aspects that deal with people, technology, culture that motivates people to learn and networks that combine people.

The organization must be able to choose what technology offers the best results to the company in building a better Knowledge Management system. The variety of different technological tools is large and employee competences to use the tools vary. Choosing the right technology for the company is complicated but according to Liebowitz (2005) the toughest parts of developing Knowledge Management are the people, process and culture aspects. This means convincing and motivating the employees to use the offered tools and to feel that the tool use will be of benefit in their work. According to Liebowitz (2005) there should be a recognition and reward structure within the company that supports a knowledge-sharing culture and encourages people to perform idea, viewpoint and opinion sharing. It is also important that these Knowledge Management processes are closely connected to the daily processes of work so that the use of knowledge sharing tools will not feel like an extra load or be forgotten.

According to Liebowitz (2005) the World Bank has realized that it needs to encourage its employees to share their knowledge with others. In the World Bank this is done by knowledge and learning sharing proficiencies. This means that each employee is evaluated and rewarded annually based on how they have reached the goals to share knowledge. NASA also rewards people with bonuses or awards for broadly sharing or making knowledge reusable by others. It has even created positions for people whose primary job is to share and distribute knowledge. (NASA Knowledge Management Team 2001 by Liebowitz 2005)

3.3.1 Capturing and sharing knowledge

Capturing existing tacit or explicit knowledge for the use of the whole organization is important. Anyhow it is impossible and unnecessary to capture all possible knowledge from the organization and save it to documents or databases. It makes no sense and is therefore never needed. Knowledge is need related, and it is important that a company is able to define what kind of information may or will be needed in the future. All knowledge cannot even be expressed easily in writing or some other storage form (e.g. filmed). That is why an organization should define the piece of relevant knowledge that it mostly needs to have captured and saved. Especially business relevant knowledge and relevant personnel competences that are at risk to

vanish should be stored up. Personnel competences that are at risk of being lost can be, for example, a good practice to perform a certain action, knowledge about leading a project or a special programming skill. Besides knowledge loss also knowledge gaps should be discovered. Knowledge gaps exist in organizations and the serious ones should be recognized and fixed. An organization has to be able to prioritize the knowledge it needs in the future, to identify gaps that need to be fixed and knowledge losses that should be prevented. After that it should start thinking about ways to capture and store the needed knowledge. (Nonaka and Takeuchi 1995; Awad and Ghaziri 2004; Liebowitz 2005)

The capturing of knowledge can be accomplished in several different ways. One common way to capture it is with the help of technology and processes that support the use of the technology. Different forms of knowledge demand different kinds of ways to capture and store it. Explicit knowledge like, for example, risk analysis, results about project reviews or quality improvements can be stored easily in databases, documents or applications. This kind of knowledge needs a formal storing place and a process that makes sure that the knowledge is always stored and utilized in the certain stage of a working action - like at the end of a project or always after a code review. When it comes to this kind of information, it is also important to decide what the core information to be saved is and how it should be packaged, how it should be sorted and the information systematized so that it can be easily found when needed. It is also important that access to information is well thought over so that information is available for those who need it when they need it. This ensures that while starting an action, knowledge from previous experiences can be found. Information access often means a high level of visibility to the information and various easy ways to sort the information so that it can be accessed according to different needs. The usability of information is a key issue, and often not covered in Knowledge Management systems in organizational use. (Awad and Ghaziri 2004; Liebowitz 2005)

Tacit knowledge could be shared more openly and in an informal manner through, for example, groupware tools, electrical working places or virtual worlds. These tools help people from different business units, groups or situations to meet each other and interact. People can express their ideas, thoughts and questions in an

informal manner that supports interactivity and collaboration. This supports the sharing of tacit knowledge that is hard to document. The way to develop the sharing of tacit knowledge is focused on encouraging people to share their knowledge and changing the corporate attitude from knowledge protection or hiding to a culture of knowledge sharing. When the tacit knowledge is shared with other people, it might be converted to explicit knowledge and could be collected by all employees freely in wikis, blogs or other interactive channels. (Awad and Ghaziri 2004; Jashapara 2004)

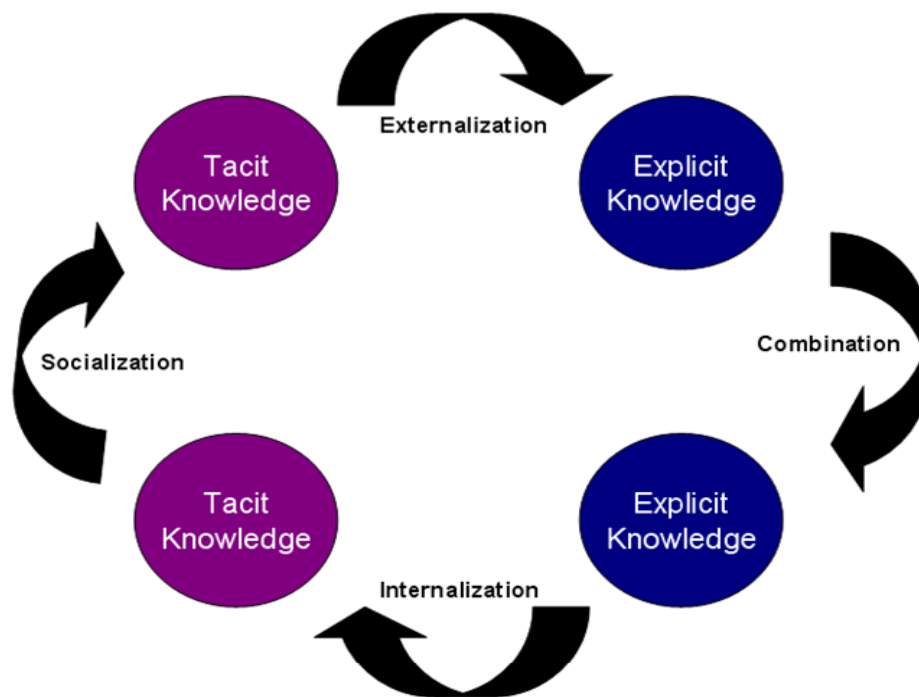


Figure 5. Knowledge conversion processes (Nonaka and Takeuchi 1995)

The sharing of knowledge is presented through four different knowledge conversion processes (Figure 5) defined by Nonaka and Takeuchi (1995). New knowledge is created in these four types of knowledge sharing processes. According to Nonaka (1995) the creating of new knowledge is a primary and lasting source of competitive advantage. Knowledge sharing processes are converting new knowledge from tacit knowledge to tacit (socialization), from tacit knowledge to explicit (externalization), from explicit knowledge to tacit (internalization) and from explicit knowledge to explicit knowledge (combination).

Socialization is sharing experiences between individuals. According to Jashapara (2004) it is much more than “know how” and it can include intuitions, hunches and insights. Socialization is deeply connected to a person’s values and beliefs. To develop socialization, people need to have the possibility to share their feelings, emotions and experiences openly. *Externalization* happens normally through dialogue and the use of figurative language, metaphors, images and inference (Jashapara 2004). The main aspect of externalization is the dialogue between people. To develop externalization in an organization, people need a possibility to share their mental models and reflect and analyze their own understanding. *Combination* occurs from capturing, collecting, organizing, editing and integrating new knowledge. (Jashapara 2004) This is exchanging and combining knowledge through, for example, databases, groupware tools, networks, applications, documents or conversations. *Internalization* happens usually through learning-by-doing or by training. The space that facilitates internalization is characterized through learning, training and mentoring. (Nonaka and Takeuchi 1995; Jashapara 2004)

As presented above, different kinds of knowledge conversion demand different solutions. An organization should define which type of conversion specially needs to be developed. Accessing explicit knowledge is easier than accessing tacit knowledge and that is why many companies especially in western countries concentrate on combining explicit knowledge to explicit. (Nonaka and Takeuchi 1995) the improvement of knowledge combination is important to the company because it creates new knowledge from existing explicit knowledge and it helps to capture and maintain existing knowledge. Nonaka and Takeuchi (1995) claim that converting tacit knowledge into explicit (externalization) is the key to an organization’s success. Companies need to pay attention to externalization because tacit knowledge covers most of the relevant knowledge needed for the company’s success. Kestilä (2008) discusses that only 20 per cent of the business relevant knowledge is explicit and the rest 80 per cent of it is tacit knowledge in peoples’ minds. Companies have huge knowledge databases inside employees’ heads and just a little bit of this knowledge in the databases of the company. Accessing tacit knowledge and utilizing it to the use of the whole company offers great possibilities to companies. Equally on the negative side, tacit knowledge is easier to lose than database knowledge. Companies

need to develop the collecting of tacit knowledge before the knowledge vanishes when people retire or change company.

Otala (2008) states that the knowledge and know-how that company tries to maintain needs to be connected to the success factors of the company. All knowledge cannot be collected and should not even be collected. A company should define, what is the knowledge it will need also in the future. This knowledge and the experts having knowledge related to the success factors are easier to cultivate when there are just a limited amount of them. A challenge in defining core knowledge is according to Otala (2008) especially to be seen in large companies. They need to be able to divide different know-how to different importance levels and link one person to one prime knowledge. (Otala 2008)

According to Liebowitz (2005) NASA has developed a lessons learned information system to capture tacit knowledge for the use of the company. This information system contains 1300 experiences about learned lessons. These lessons learned include both successes and failures of project management and systems engineering. NASA has realized that it is not enough to simply capture the experiences: It also requires that all project managers need to collect their experiences and input them to the system as well as use the earlier experiences in their work. (Liebowitz 2005)

3.3.2 Communication

Communication in the development of Knowledge Management concentrates on technological interaction possibilities between the employees of the company. This includes sharing ideas, viewpoints, opinions and knowledge through technical tools. Corporate communication should be improved to provide employees possibilities to be in contact and interact with people over organizational boundaries. Organizations are becoming more international and remote work is starting to be a part of daily work. People from one business unit or group might have their working station in different locations and still they should be able to communicate easily or work with the same documents every day. Employees may be situated even in different time zones on the other side of the world and have different working times and still they should be able to work together. With the help of information and communication

technology (ICT) communication can be asynchronous and happen from different locations. Figure 6 presents different types of communication depending on the amount of people communicating and the timing of their communication. The amount of people interacts with the communication, for example, because there might be as many different locations, communication needs and time zones as there are people communicating. (Brinck 1998; Fitzgerald 2008)

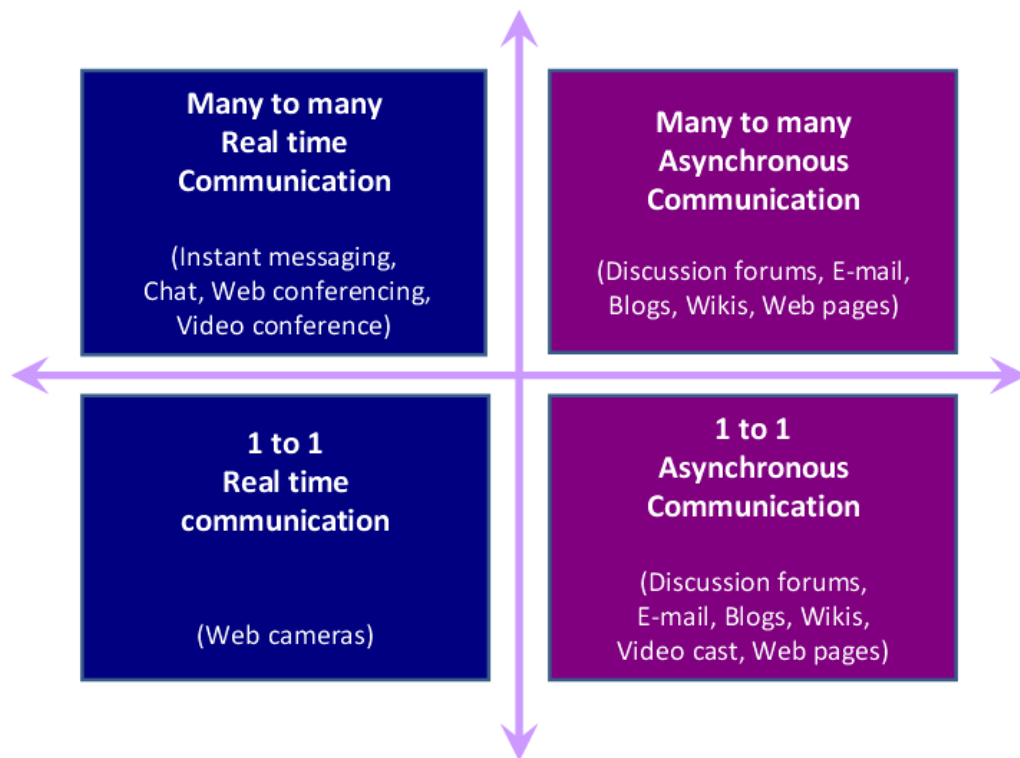


Figure 6. Types of communication depending of time and place (Modified from Brinck 1998; Awad and Ghaziri 2004; Fitzgerald 2008)

In organizations there exists a need to be able to operate in all four areas of this matrix (Figure 6). Social Media tools can be used in all these four types of communication; 1 to 1 real time, many to many real time, 1 to 1 asynchronous, or many to many asynchronous communication. Each type of communication demands a different kind of solution. Real time communication from different locations between two people has many tool possibilities, for instance, instant messaging, e-mail or chat. Web camera is mentioned in the figure above because this tool functions in the best possible way in this type of communication. Each person using a web camera uses an individual connection and the web camera can be utilized well when the amount of connections is not high. In "many to many" real time communication it is important that

everybody can easily take part in the communication and that all conversations can be seen or heard together through one tool and not from many open windows. All people can participate in common discussion through, for example, instant messaging, chat, web or video conference. (Awad and Ghaziri 2004; Fitzgerald 2008)

Asynchronous communication can happen only through some tools that save the conversations. When people are communicating at different times they demand a solution that supports organizing the information to clear entities or has a search functionality that helps users to find the information they are looking for. Asynchronous communication can happen, for example, through discussion forums, e-mail, blog, wiki, video casts or web pages. Deciding upon the appropriate communication tool from these for each conversation varies according to the amount of people needing to communicate and whether the information is used only once or also in the future by many users. Organizations should define their communication needs in different situations, prioritize these needs and offer appropriate tools for employees for these situations. (Brinck 1998; Awad and Ghaziri 2004)

If an organization wants to be effective, its employees have to be able to communicate easily with each other. Corporate demands to develop communication should be therefore investigated, prioritized and improved. Communication plays also a big role in the emergence of innovations. People that share similar interests should also be able to communicate and share ideas in an open manner if an organization wants to get new ideas. This is investigated in greater detail below in “Ability to innovate”. (Brinck 1998; Awad and Ghaziri 2004)

3.3.3 Ability to innovate

The ability to innovate is considered to be a crucial success factor for all companies. It is the key for an organizations success. Chesbrough (2003) states that: “companies that don’t innovate die”. According to him, the demand to be able to innovate is a certainty for organizations. The main question to be considered is how to innovate. An innovation can be seen as introducing successfully something new and useful, such as introducing a new method, process, technique, practice, service or product. Some researchers like Fagerberg (2005) define an innovation as an attempt to carry

an idea into practice. It might also be a new manner to perform an action in a better or different way than was previously used to execute the same action. (Ojala 2008) Innovations can be divided into radical and incremental innovations. According to Leifer (2000) radical innovations refer to the development of new ideas, technologies, inventions or business. Radical innovations cause a radical change to the previous actions. Incremental innovation instead improves existing products, services or processes. (Leifer 2000)

A closed innovation paradigm has traditionally been used to support innovation within companies. The closed view states that a successful innovation happens inside a company and requires control. On the contrary, an open innovation paradigm instead means that organizations should leverage external ideas as well as internal ideas to innovate. Chesbrough (2003) states that instead of restricting and controlling the innovation process, companies should use people over group, business unit or company's boundaries to develop the idea. Existing ideas could be developed even outside the company and then taken back to the company as new offerings. According to Chesbrough (2003) companies are facing a fundamental change from the closed innovations to open innovation paradigm.

Social Media tools offer support especially to a corporate culture of open innovation. These tools make openness and effective interactivity possible over organizational boundaries. Ojala (2008) discusses that if an organization wants to live in an Internet culture - which is collaborative and open - it must adapt also new operational models that support openness. As an example, Ojala (2008) describes IBM's new way of action from closeness to openness. IBM has just recently opened some of its programming patents to be utilized by others. It hopes to benefit from the product development made by all users. Nokia has also started to use the open innovation approach to develop its products. Torikka (2008) describes that Nokia's chief technical officer Bob Iannucci informed that Nokia is just learning how to be open in product development. Nokia is changing its attitude from closed innovations to openness because Nokia has become too large for its own product development unit. (Torikka 2008) Naturally companies need to consider the pros and cons of openness; what the risks of openness are, which information can be made generally accessible, which information is of a strategic nature and needs to be utilized solely within the organization.

Lehto (2005) states that most companies in Finland are still using the closed innovation paradigm to innovate. He discusses that the small size of Finland does not cause much movement of the employees from company to another, which is one reason for the approach of the open innovation paradigm in United States. In any case the European Union context makes it possible to combine people from different countries in Europe and facilitate employee movement not only between companies but over country borders. As a part of the European Union, also companies situated in Finland should consider the open innovation paradigm as one possibility for developing their ability to innovate. Lehto states that especially in service companies the use of an open innovation paradigm might be difficult. This is because all partners in the same field are also potential competitors. This clearly prevents changing of ideas between companies and the use of the paradigm.

There exist many models that can be utilized in the companies to innovate new products, services or solutions. In the service companies the process of generating ideas can be divided into idea generation and idea screening. (Kelly and Storey 2000) *Idea generation* means the creating of ideas and starts with capturing practical needs, existing ideas, viewpoints, problems, duties, possibilities and technical solutions. *Idea screening* refers to collecting more knowledge about the ideas and developing them further. Kelly and Storey (2000) state that innovating products in service companies differs from innovation tangible products. Services are at least partly intangible. They are processes or actions that are used or experienced at the same time they are produced. Service users always take part in the service event. Therefore, service innovation demands different methods and approaches when compared to innovating tangible products.

According to Kelly and Storey (2000) most service companies do not have a formal innovation process with which to generate ideas. They state that only 25 percent of service companies generate ideas continuously. The rest of the service companies generate ideas occasionally when required. Kelly and Storey (2000) discuss that most service companies are just starting to understand that a formal innovation process would help them to capture and develop ideas. A problem that prevents building an

innovation strategy in these companies is that they are lacking expertise and financing to build it.

Ahola and Lietsala (2007) discuss that companies need to find a proper attitude and appropriate tools that encourage the developing of ideas. Tools can be utilized to turn the flow of ideas to knowledge which is worthwhile to the firms developing an ability to innovate. This goes especially for Social Media tools because they enable open and free interaction between people. Jaspars (2004) discusses that the possibility to use figurative language, imagination and playing with abstract ideas enables the emergence of innovations.

Skarzynski and Gibson (2008) state that innovations should happen according to a systematically applied plan all the time, everywhere and by everybody in the company. They explain that innovating should be seen as part of processes and belong to everyday working routines. According to Skarzynski and Gibson (2008) Whirlpool is a good example of a firm that has succeeded in getting innovation as part of everyday work. It needed 3 to 5 years time, money and commitment to change to an innovative firm but this development has resulted in 20 times larger yearly revenues from 2003 to 2006. The actions that Whirlpool made to improve its innovativeness were, for example, the nomination of a vice president of innovation and innovation teams that support idea generation, the establishment of a training program for employees to develop and distribute the mindsets and implement an ICT solution that combined all employees and their ideas. Whirlpool also held innovation days where ideas were presented to other employees or customers to get feedback from them. Whirlpool has even constituted innovation indicators that it can follow to make sure that innovations are emerging continuously. (Skarzynski and Gibson 2008)

It is not necessary and not even realistic or possible to collect all existing ideas. Instead of trying to collect all ideas, only ideas that are related to valuable business impacting information should be collected. Figure 7 presents the process of collecting and developing ideas according to Skarzynski and Gibson (2008). The triangle on the left side (diverge) represents the generation of a rich and diverse portfolio of ideas and strategic options. The triangle on the right side (converge) follows the idea gen-

eration and consists of finding patterns and clusters of ideas that guide the firm in a clear strategic direction. (Skarzynski and Gibson 2008)

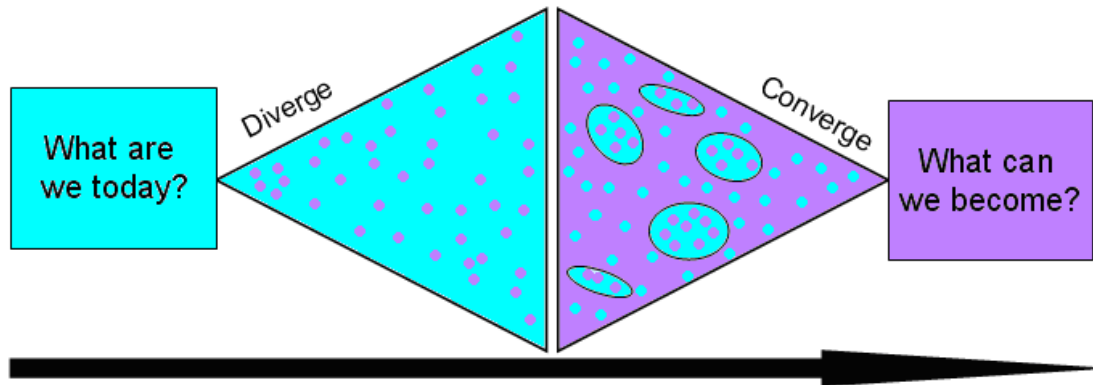


Figure 7. Idea development (Skarzynski and Gibson 2008)

Traditionally the management of a company has been both the creator and organizer of the ideas. This is a possible threat for a company when only the ideas of the managers are collected. Managers usually represent similar opinions about, for example, future of the company, the situation in the industry and about the competition and generate only a small amount of alternative ideas. According to Skarzynski and Gibson (2008) nowadays company should have as diverse group of people generating ideas as possible to be successful also in the future. At least all employees of the company should be able to share their ideas but also customers, outsourcing partners and competitors could create interesting ideas for the company's use. The ideas should be generated by a group of people that represent different ages, experiences, cultures and surroundings. (Skarzynski and Gibson 2008) There are many possible tools for creating ideas together with a massive amount of people. Tapscott and Williams (2008) explain that some companies have used, for instance, a wiki solution in building a strategy and generating ideas together.

The innovations made help organizations to develop their business advantage to keep track of competition with other companies. According to Lubit (2001) a competitive advantage is increasingly found in knowing how to do things instead of having a special access to resources and markets. He discusses that knowledge and intellectual capital are becoming to be primary bases of core competences and a key to superior performance. Because knowledge is becoming the basis of competitive advantage, effective and interactive Knowledge Management is vital for company's success.

According to Jashapara (2004) converting tacit knowledge to explicit knowledge is a primary process for successful ideas. Lubit (2001) agrees that the ability to capture and share tacit knowledge is a key to develop a competitive advantage because tacit knowledge is much harder for competitors to copy than explicit knowledge. For creating competitive advantage and new innovations, people need to be able to communicate in an open way and over the boundaries of organizations. This places a demand on the tools that are used for communicating.

One challenge in developing a company's ability to innovate is that most Knowledge Management development efforts are focused on creating a technological solution to capture ideas. A technical solution is a good and important base for the solution, but aspect with the system's users should also be considered. More attention should be given to convincing people to use the new system. (Lubit 2001) Lubit (2001) discusses that knowledge is the basis of respect and power in the organization, so people might hesitate to share their knowledge if they feel of losing power at the same time. According to Ojala (2008) employees cannot be forced to be innovative. A company should create circumstances that motivate people to share knowledge, collect new knowledge and question the existing information. A company should find a way to encourage people to share their ideas. This can be supported through incentive systems providing rewards or awards. Ojala (2008) discusses that people need interaction with others to innovate. Anyhow it is important that the corporate encouragement does improve collaboration instead of competition. Competition in generating ideas might lead to hindering the sharing of ideas with co-workers and that is not the aim of the company. (Lubit 2001)

Another challenge is caused by demands of extreme efficiency limiting time to be used to anything else than to work invoiced from the customer. Innovativeness demands time and mental space. When an idea has appeared within a group of people, they need time to continue developing possibilities of it and to share the idea with other employees. If there is no time to continue developing the idea, it might just be forgotten. Employees often feel that time used for sharing of knowledge and generating ideas is away from the daily responsibilities with higher priorities. (Lubit 2001) A company needs to change its culture and attitudes towards idea creation if it ex-

pects a constant flow of new ideas. It should not only change its strategy but also show that the time used for innovating is as important as the time used for normal working activities.

Ownership and patent related matters also cause problems for innovation cooperation. Companies need to define who owns the idea or innovation made, who is allowed to patent it, who is allowed to develop it and who is financing its development and implementation. The starting of collaboration with partners might come to an end already at the planning stage of the cooperation if the companies are not interested to invest time and resources to examine possibilities for innovating with partners.

Ahonen and Lietsala (2007) have examined different ways to manage innovations in companies with the help of information and communications technology (ICT). Ahonen and Lietsala (2007) discuss that, for example, the pharmaceutical company Lilly has launched an open innovation community InnoCentive (www.innocentive.com) to gather knowledge and ideas about developing drugs and other products. Companies from the same field can express their problems in InnoCentive and then people from different organizations can answer to these problems. When a problem has been solved, a company that has asked the question pays a fee to solvers (and a fee to participate to InnoCentive). The gained knowledge stays in the InnoCentive and can be utilized in other problems as well.

4 Social Media

The third theoretical viewpoint towards the research problem – in addition to previously described Quality Management and Knowledge Management – is the utilization of technology and especially that of Social Media. (Figure 2) The focus of this chapter is in the recognition of the possibilities and challenges of using Social Media in managing knowledge in organizations. The aim in developing Knowledge Management through Social Media utilization is in better knowledge distribution, communication and in the emergence of innovations as described already in the previous chapter. Some widely used Social Media tools and applications that could be utilized in the companies are also presented here in detail.

4.1 Social Media and its possibilities

Social Media refers to collaboratively produced or shared media content and to network communities. Social Media Applications are interactive applications that offer users possibilities to share their opinions, experiences, insights and perspectives easily. Social Media applications include, for example, wikis, blogs, Internet forums, virtual workplaces, instant messaging and music and video sharing. The terms *Web 2.0* as well as *social software* have also been used synonymously with Social Media. In Web 2.0 Internet content can be commented upon, modified, developed further and discussed interactively with other users. Ahonen and Lietsala (2007) discuss that Social Media has opened new possibilities for users to participate in online communities and produce content collaboratively. They comment that this would not have been technically possible even ten years ago. (Ahonen and Lietsala 2007; Ojala 2008)

As presented in Figure 1, Web 2.0 is a phase of the World Wide Web between the first phase Web 1.0 and the emerging phase Web 3.0. Web 1.0 is characterized by published content that producers generate to Web pages and customers can read from the pages. Web 2.0 (Social Media) is based on user generated content, openness and the sharing of content. Every user of Web 2.0 Internet can act as a producer and a customer at the same time. The emerging Internet is called Web 3.0. Web 3.0

characteristics are platform independence, Internet content that is understandable by computer and applications that appear three dimensional to the user. Figure 8 presents the different characteristics of these Web phases.

Driver (2008) discusses that Social Media use and Web 2.0 are just the beginning for a big change in the Internet. She explains that the next major Internet wave, Web 3.0, will be a linked and interactive two or three dimensional environment that includes everything from use-specific and private applications to a virtual world that are open to everybody. Driver (2008) predicts that people will move between applications and worlds in a natural way. She argues that the experience in the Internet will increase motivation and engagement compared to the static and text oriented information of the current Internet. Other Web 3.0 predictors describe that in Web 3.0, the Internet content and discussions are followed by computers. They state that computers are programmed to create new Internet content by following documents, discussions and other information about similar subjects. (Radar Networks and Nova Spivack 2008; Tapscott and Williams 2008)

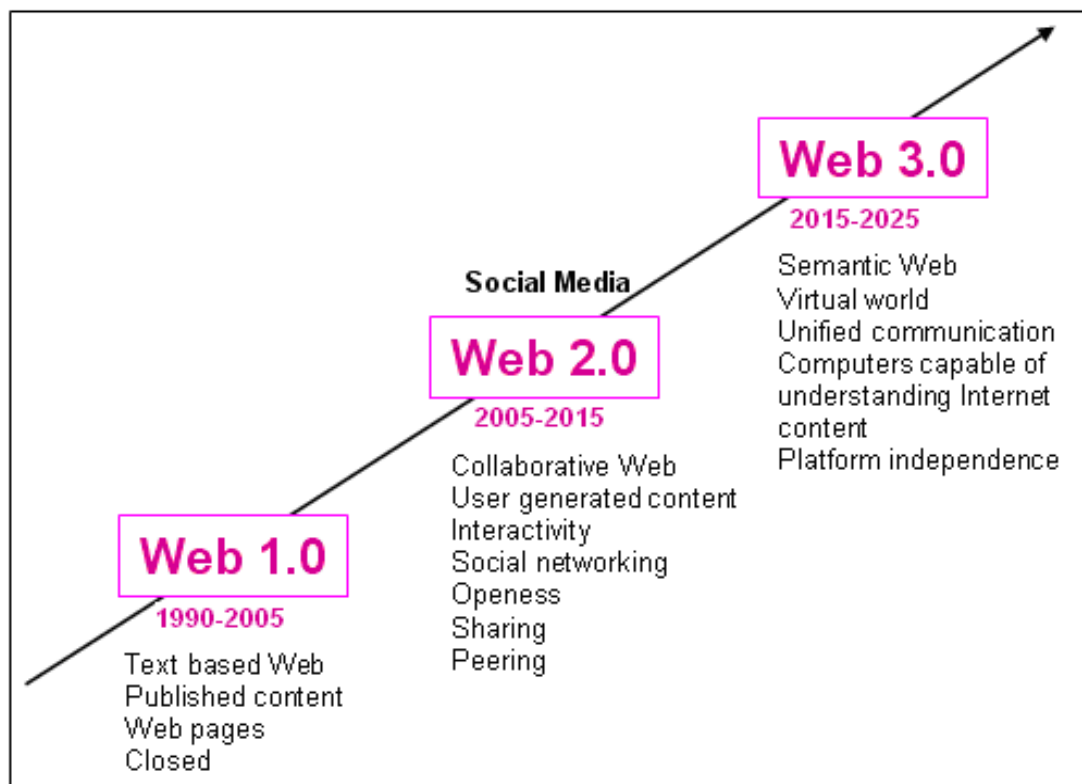


Figure 8. Development from Web 1.0 to Web 3.0 (Modified from Hayes 2006; Radiar Networks and Nova Spivack 2007; Jones 2008; Tapscott and Williams 2008)

Although there are many Social Media applications and technologies that are categorized under the term Social Media, Social Media refers also to a mindset of using this technology, its applications and tools. This way of thinking encourages openness, sharing of knowledge in a collaborative manner, shared power to decide and interactivity. New corporate culture that supports open knowledge sharing, customs to use the Social Media tools and ways to encourage users are needed besides Social Media technologies. New operational models for sharing knowledge instead of withholding it should be taken into consideration besides the technological possibilities to be able to utilize Social Media tools usefully.

According to Ojala (2008) companies' information and communications technology (ICT) solutions are built to support business processes instead of social processes. Nevertheless, employees use most of their time at work on something else other than the core business processes they should be focusing on. This means that a huge portion of time is used on failures, exceptions and other unexpected scenarios which cannot be solved according to the formal guidelines or documents. Actions needed to solve these scenarios require interactivity between employees. This can happen by the sharing of experiences, viewpoints and ideas or asking advice from each other. (Ojala 2008) Social Media tools can be used as one answer to this demand to work more interactively. According to Blacker et al. (2000) it is important that instead of employees working at isolated physical or virtual work stations, they should be able to work in a way that supports shared interpretations of shared data. Social Media enables this. The user is no longer only a user of a certain application; he/she instead has a possibility to produce the media content of the application in a collaborative manner.

Internet is already changing towards more interactive applications but companies' internal networks should also adapt to the new features from the Internet. A company should start utilizing Social Media tools now when the change from old to new tools is not yet too large to overcome. According to Tapscott and Williams (2008) the possibility to bring the younger generation – the people that are born into the digital world - into the enterprise with their values and ways to work will generate one of

the most exciting, long-lasting changes and innovation that the business world has ever seen.

Managing knowledge

Gartner consulting (Linnake 2008) discusses that companies need Social Media to support and strengthen collaboration in the company. Employees need more information about existing knowledge in the company and about competences their co-workers have. There exist many Social Media Applications - like Facebook, LinkedIn or MySpace - that offer possibilities to interactive communication, effective document sharing or more detailed personnel lists with employee competences. Besides existing Social Media tools, organizations can also acquire tools that are planned to the organization. Also networks between different people could be made visible to other employees with the help of this kind of Social Media utilization. Social Media also enables more effective sharing of knowledge in an organization. Wiki, blog or online forums can be used to improve the personnel's possibilities to correct, update or add instructions, documents or other materials to a company's Intranet. Tapscott and Williams (2008) describe that at Xerox a wiki is used, for example, collaboratively to define the company's technology strategy.

The personalization of virtual workplaces or intranet view is also feasible with the help of Social Media. A company can choose whether everybody is able to see everything easily or is just the relevant information to each employee shown. It is very clear that the latter alternative is the one that will be chosen. The employee can also personalize their own view and the visibility of their own materials to other employees. The company must be able to choose which pieces of knowledge need to be visible to all employees and which information interests only certain groups. In any case, it is important that the employee is also able to find the knowledge that does not particularly belong to his/her work and does not get the feeling that most knowledge is prevented from him/her. This information does not have to be on the main page or first links but should be found, for example, with the help of search engine. (Linnake 2008; Ojala 2008; Tapscott and Williams 2008)

Communication

Communication in the virtual world or discussion forums is just one form of communication besides face to face communication. It has been studied that the people's physical reactions to different kind of happening in the virtual world are really similar or the same compared to the reactions in the "real" world. (Holmberg 2008) Holmberg (2008) discusses that social behavior models are transferred to the virtual world. He explains, for instance, that when people meet in the virtual world, they often form a circle where to communicate with each other like in the real world although it would be possible to discuss in a dispersed arrangement as well.

According to Ojala (2008) email has become an essential form of communication in companies. There are big databases of knowledge contained in peoples email folders. It is easy to send all information that can be visualized to others through email. A challenge of using email for communication, cooperation and changing of knowledge is the amount of mail people receive every day. Most messages sent are junk mails, but the amount of relevant mails is also getting too big for an employee even to go through each day. (Ojala 2008) Companies need to face the reality that they should find another solution besides email to be used for cooperation and communication. Virtual working places can be used to work with the same document or to support cooperation. RSS feeds could be used to compensate email as an information channel and instant messaging should be provided to enable easy communication.

Personnel are already using Social Media application provided outside the company in their work. Especially younger people feel that the software provided by most companies is old and rigid because they have grown up with Internet and have used its tools all their lives. Employees feel frustrated at using old tools experienced to be old and non-supportive to effective communication, the sharing of documents or asynchronous working. They start using software offered outside the company to make their work more effective, if that is not prevented. This is a possibility and a security risk for a company and can be solved by offering Social Media functionalities inside the company. Gartner consulting (Hämäläinen 2008) explains that companies should forget their policy of preventing the tool use outside the company and instead find ways to start utilizing the same tools safely within the company. Some

companies, like the international software company Serena Software, have already realized that the employees need modern ways to communicate and distribute knowledge. Serena Software even advises its employees to use the Social Media application Facebook in their working time to make connections with their co-workers. (Hämäläinen 2008; Ihanus 2008; Lahdensivu 2008) Nevertheless, some companies still strictly forbid using of tools offered outside the company. According to Ojala (2008) banks in particular are denying the use of Social Media tools from the Internet. Reason for this might be their very high security requirements.

Asynchronous and synchronic working occurring from the same or different location demand a different kind of solutions as presented earlier in Figure 6. For example instant messaging, chatting or video conferencing can be utilized in synchronic communication when employees are at the same time on the job. Asynchronous communication and working with the same documents at different times instead demands other solutions. These solutions – like chats, discussion forums, e-mails, blogs or wikis – should save the information to be used at different times. The solution to be used depends on the type of conversation, the amount of people attending it, the need to save the conversation for later use as well as privacy matters. Privacy matters can occur from different physical locations, different corporate locations – like partner companies situated in different networks or from the legislation of some country that prevents free conversation. (Brinck 1998; Awad and Ghaziri 2004)

Social Media can also be utilized to recruit people. Ojala (2008) tells that, for example, Accenture and GE Money have recruited people through the virtual world Second Life. Some companies follow people's profiles in Social Media Applications and contact the appropriate persons. Even some work interviews have been made in the virtual world. Lietsala (2008) also describes an example that concerns studying that has been made in the virtual world. Each student is represented by an avatar that freely moves in this world. Teachers have taken tours of modeled towns, houses or inside cells with their student in the virtual world. New ways to learn and participate at the same time offer possibilities for new kind of learning.

Ability to innovate

Social Media can also be utilized to support openness and development of innovations together with clients or other companies. Cooperation and interactivity between people situated in different physical locations has never before been this easy. Social Media offers great possibilities for the success of companies in the future. If the company is able to utilize Social Media inside the company, it is also able to utilize it outside the company in interaction with clients. Some companies like Lego (Hintikka 2007) are advanced in Social Media use with clients. The tools of Social Media provide Lego an easy possibility to ask from their customer, what they really want. Lego offers on its Website a possibility to design Lego products and evaluate and rate existing products. Lego just needs to collect the most promising ideas from their customers and realize them. Other companies need to start using Social Media at least inside the company to collect knowledge about the possibilities of Social Media. This knowledge can be used to improve interaction with clients in the future. Ojala (2008) also states that Social Media tool use will help to bring out the competence of the organization to the awareness of others.

Employees' possibilities to have an influence on the media content of company's internal applications facilitate creativity, open communication and the sharing of knowledge among users. This is beneficial for the company if it is able to utilize Social Media functionalities effectively. The company benefits in increasing the amount of ideas and innovations made and in more effective working practices. Working has become more effective and also easier because of better work communication and the distribution of both tacit and explicit knowledge in the company. Employees can find the knowledge they need easily and utilize previous experiences made in the company in their work. Losses of knowledge are diminished because of new ways to manage knowledge between projects and ways for collecting knowledge from retiring employees before they leave the company. (Kelly and Storey 2000; Lietsala 2008; Ojala 2008)

4.2 Challenges emerging from the utilization of Social Media

Besides the many possibilities that Social Media tools offer, a company faces also challenges when starting to use Social Media tools in working activities. According to Gartner's research (Linnake 2008), companies face five main challenges when starting to utilize Social Media in the activities of the company. These challenges are (1) choosing the right operational models to find Social Media tools that are relevant for the company's business, (2) overcoming cultural barriers, (3) privacy, (4) behavior of the tool users and (5) time related challenges.

(1) Choosing the right operational models refers to finding Social Media tools that will develop corporate operations in a planned way. This should be done from the business point of view, and a company should define its needs to utilize Social Media in different operations. These needs should be prioritized and the tools that answer the prioritized needs should be defined. The efforts needed to start using the chosen tools should also be evaluated. After that the company should find an appropriate way to motivate personnel to use these tools in a way that the organization wishes these tools to be used.

According to Lubit (2001) a challenge of using information and communications technology (ICT) tools in managing knowledge is that these solutions require that tacit knowledge is converted to explicit knowledge. This conversion is difficult to carry out but it offers great possibilities if it is successful. A problem with converting tacit knowledge to explicit is that sometimes converting tacit knowledge to explicit might damage or diminish its real value. Tacit knowledge might be tied up with its context. If it is converted to explicit knowledge and used in another context, it might not be usable anymore. (Davenport and Prusak 1998; Lubit 2001; Nieminen 2007)

(2) Overcoming cultural barriers refers to attitude and behavioral changes needed to get all employees taking part to the Social Media tool use. Awad and Ghaziri (2004) discuss that there are also different kinds of users in a knowledge system. These user groups - experts and knowledge workers - have different needs and wishes towards the system. Any employee can be an expert or a knowledge worker depending of the

situation. Knowledge and expertise are the things that separate these two user groups from each other. Experts “own” and create the knowledge in the knowledge system and knowledge workers seek and use that knowledge. The difference between these groups is that experts do not necessarily need the system often because they already have the necessary knowledge they need for working in their minds. From a company’s point of view, they are the employees that need to be encouraged to use the system and share their knowledge. Knowledge workers are easier to persuade to utilize the knowledge system, but they will not use it either if there is not enough information provided by the experts. A company should find out ways to encourage experts to share their knowledge and after that to persuade knowledge workers to use the system. (Awad and Ghaziri 2004)

(3) According to the researches of Gartner (Linnake 2008) the privacy of the users should be taken into account to assure that information that is meant to be private also remains private. This is an important matter for organizations. Although attitudes towards openness of information in the organizations have risen, there still exists information that is meant just for a particular group. This might be, for example, business information that is not meant for consultants or partner organizations or information that managers have about individual employees. (Linnake 2008)

(4) Behavior of the tool users should also be observed. According to Fiilin (2007) the possibility to publish information on an organization’s Intranet without a name or behind a pseudonym might dilute the quality of the Intranet content. He discusses that IBM has also noticed that problem, and for this reason the policy is such that the conversations in the Intranet must be done using the employee’s own name. Fiilin (2007) tells that IBM has been satisfied with this way of communicating with the person’s real name added to the conversations.

Employee competences to use information and communications technology (ICT) vary a lot. According to Prensky (2001) users of ICT tools can be divided to digital natives and digital immigrants based on their familiarity with the digital world. Digital natives refers to people that are born into the digital world. They feel comfortable while using digital tools and consider them as a part of normal life. Digital immi-

grants instead are not born to the digital world. They are usually over the age of thirty and not used to the use of digital tools. (Prensky 2001) Table 1 on next page presents the differences of digital natives and digital immigrants in the use of Social Media.

Table 1. Differences of digital natives compared to digital immigrants in the Social Media use (Presnsky 2001; Basso and Prentice2008; Lietsala 2008; Tapscott and Williams 2008)

STRENGTHS OF DIGITAL NATIVES IN SOCIAL MEDIA USE	STRENGTHS OF DIGITAL IMMIGRANTS IN SOCIAL MEDIA USE
<ul style="list-style-type: none"> • Good skills to utilize Internet and Intranet • Many Social Media tools familiar • Fast ability to adapt to use new tools • No fear for new technology 	<ul style="list-style-type: none"> • Experience of previous tools that have been used at work, long experience of some ICT tools (e.g. Office) • Experience of information that should not be published openly (e.g. personal protection)
WEAKNESSES OF DIGITAL NATIVES IN SOCIAL MEDIA USE	WEAKNESSES OF DIGITAL IMMIGRANTS IN SOCIAL MEDIA USE
<ul style="list-style-type: none"> • Risk of over optimism • Not much experience about previous tools that have been used at work • Possibly poor skills in areas that are not popular in out-of-office use • No experience of paradigm change • Not much experience about what piece of information is allowed to publish openly to everybody 	<ul style="list-style-type: none"> • Considerable Social Media tool learning challenges • Have to get over a paradigm change; attitude changes required before behavior changes • May not overcome next level paradigm changes

It is a challenge to a company to find out operational models to get all employees to use Social Media tools irrespective of their mindsets towards Social Media, competences and prejudices. According to Tapscott and Williams (2008) digital immigrants

in particular are to encounter challenges in adopting new Social Media tools and new ways of working. They will face a paradigm shift from old customary ways of working to newer, more open and collaborative working methods. Digital natives are already accustomed to Social Media tool use and they will not encounter a paradigm change this time. Digital natives are instead the generation that will cause the change to the new open, interactive and collaborative ways of working when they enter the employment market. Because of differences in Social Media familiarity and competences to use it, also the need for training and the ability to try out new functionalities varies between digital natives and immigrants. That is why companies should find out about the training needs of both groups and offer suitable support depending of the needs. Ways to encourage tool users should also be researched from the point of view of different generations.

(5) Time related challenges mean that users start to use Social Media tools to communicate about their personal matters instead of working matters. Organizations need to pay attention to more virtual and less strict working environment and create new working processes and ways to evaluate productivity that respond to the new possibilities of work communication. (Lahti 2008, Linnake 2008, Hämäläinen 2008) Time related problems may also occur when communication possibilities develop and working from home gets easier. It might lead to situation where employees are contacted from work at any time of the day. This may lead to employee exhaustion if they have the feeling of being at work around the clock.

4.3 Social Media tools

Knowledge Management tools can be divided into four groups based on their functionalities. (Jashapara 2004) These groups are also relevant with Social Media tools. The four categories of Knowledge Management tools can be divided into knowledge capturing tools, knowledge evaluating tools, knowledge sharing tools and tools that can be used to store and present knowledge. Companies need tools from all these four groups to be able to manage knowledge effectively. (Jashapara 2004)

Many Social Media tools belong to more than one category of Knowledge Management tools. Blogs, wikis or discussion forums can, for example, be easily

used to capture knowledge. At the same time they can be used to share knowledge. Information and discussions are saved for further use in those tools, so they belong to the category of storing and presenting knowledge. These tools also work as knowledge evaluating tools because existing knowledge can easily be discussed, analyzed and saved in the new form. Although many Social Media tools belong to all categories, it does not mean that they are the best tool to each situation. Instant messaging for example could improve the sharing of knowledge if the knowledge is not supposed to be saved. Virtual communities might be a better solution than blogs or wikis for a group of people working together with specific documents.

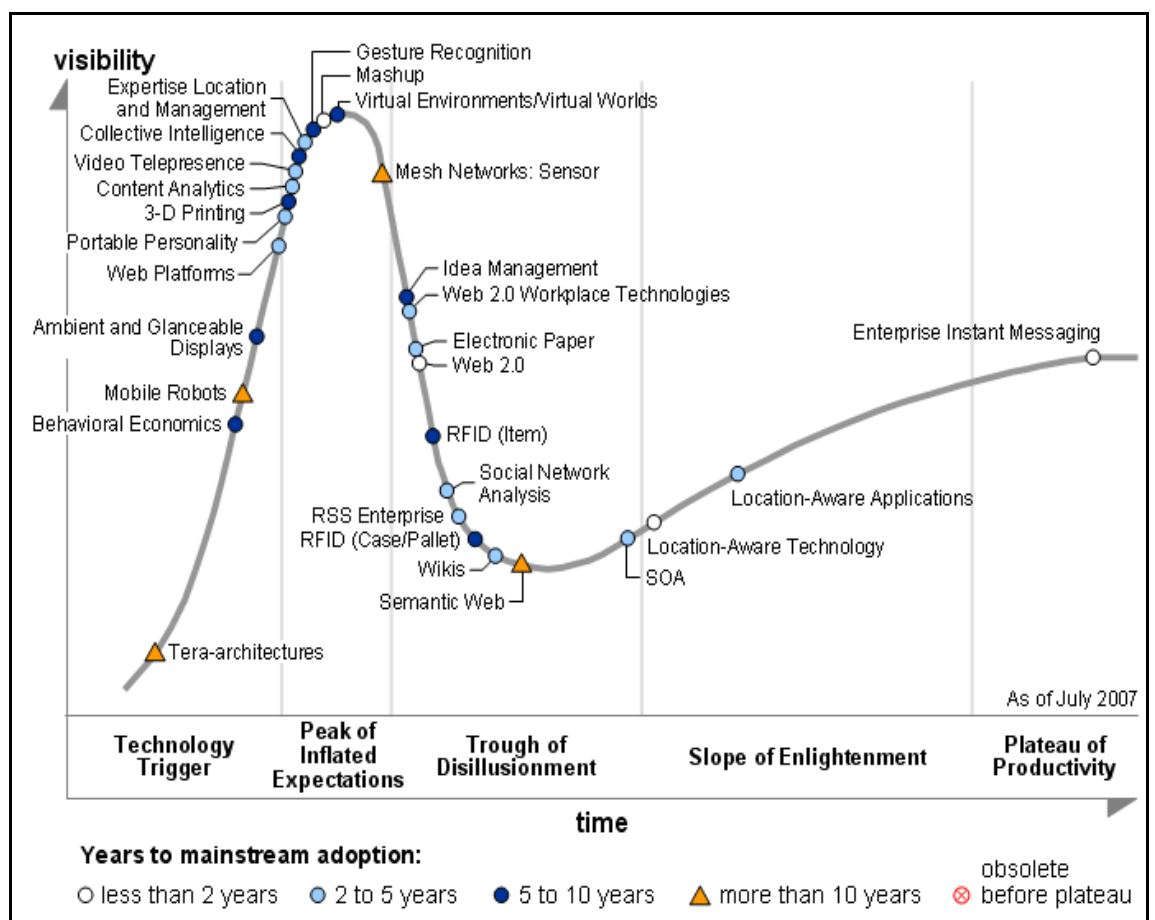


Figure 9. Current emerging technologies (McGee 2008)

As presented in Figure 6, the Social Media tool suitable for each situation depends on the type of communication. The type of communication depends on timing, location and the people attending to it. For example, asynchronous conversation and the sharing of knowledge always demand a tool to even happen. While planning corporate tools, the communication situations and the needs people have in them should be de-

fined to be able to choose the best tool for each situation. (Brinck 1998; Awad and Ghaziri 2004) Needs in the communication situation are, for example, demand to save the conversation for later use or that the communication should be quiet because of the risk of disturbing co-workers in an open office environment.

New Social Media tools are developed all the time. New opportunities for business rise when more and more people start using these tools and technical inventions accelerate the development. Figure 9 presents some emerging technologies and Social Media tools and shows how they were adopted on July 2007 by Internet and Intranet users. As presented in Figure 9, enterprise instant messaging is already well utilized and known when, for example, 3D printing and mobile robots are still unknown to most users.

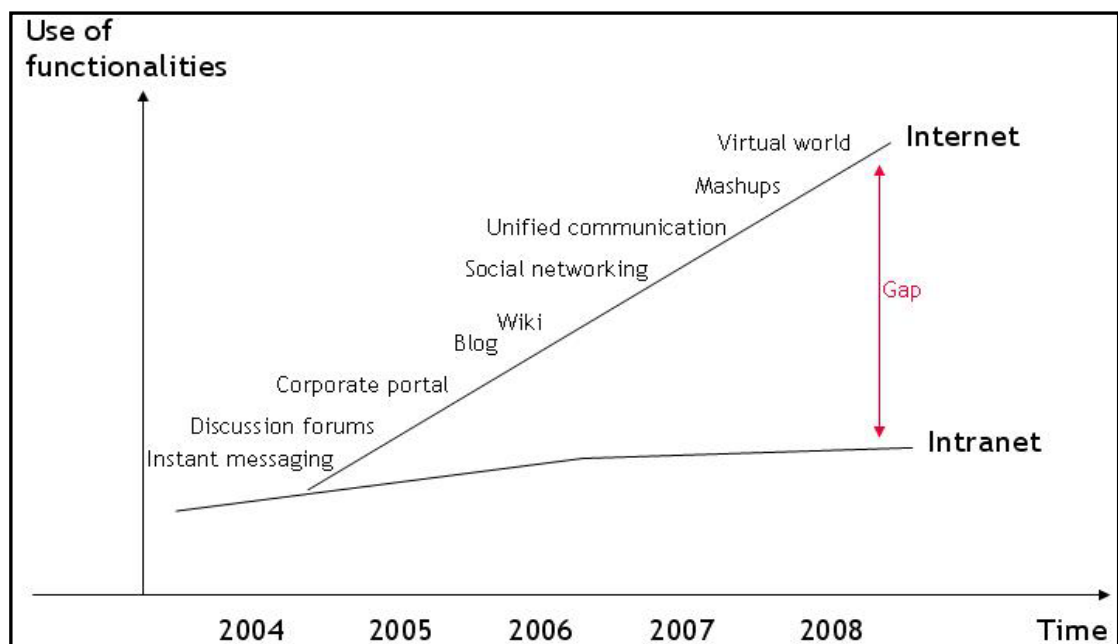


Figure 10. Gap between Intranet services and the possibilities of Internet technology (Modified from Yli-Olli 2008)

Although Social Media tools are already widely used in the Internet and during free time, there exists a gap between the Social Media tools used inside companies and out on the Internet. Figure 10 presents the growing gap between technologies that are widely used on the Internet and not yet well utilized inside companies. The interpretation of this figure is that Internet possibilities are poorly exploited in

Intranets. The different functionalities of Internet and Intranet - Social Media tools - are explained later in this chapter. Forrester research (2008) expresses the view that although the possibilities of Internet are not yet widely utilized inside company networks, the business adaptation of the Social Media tools is expected to grow strongly in the near future.

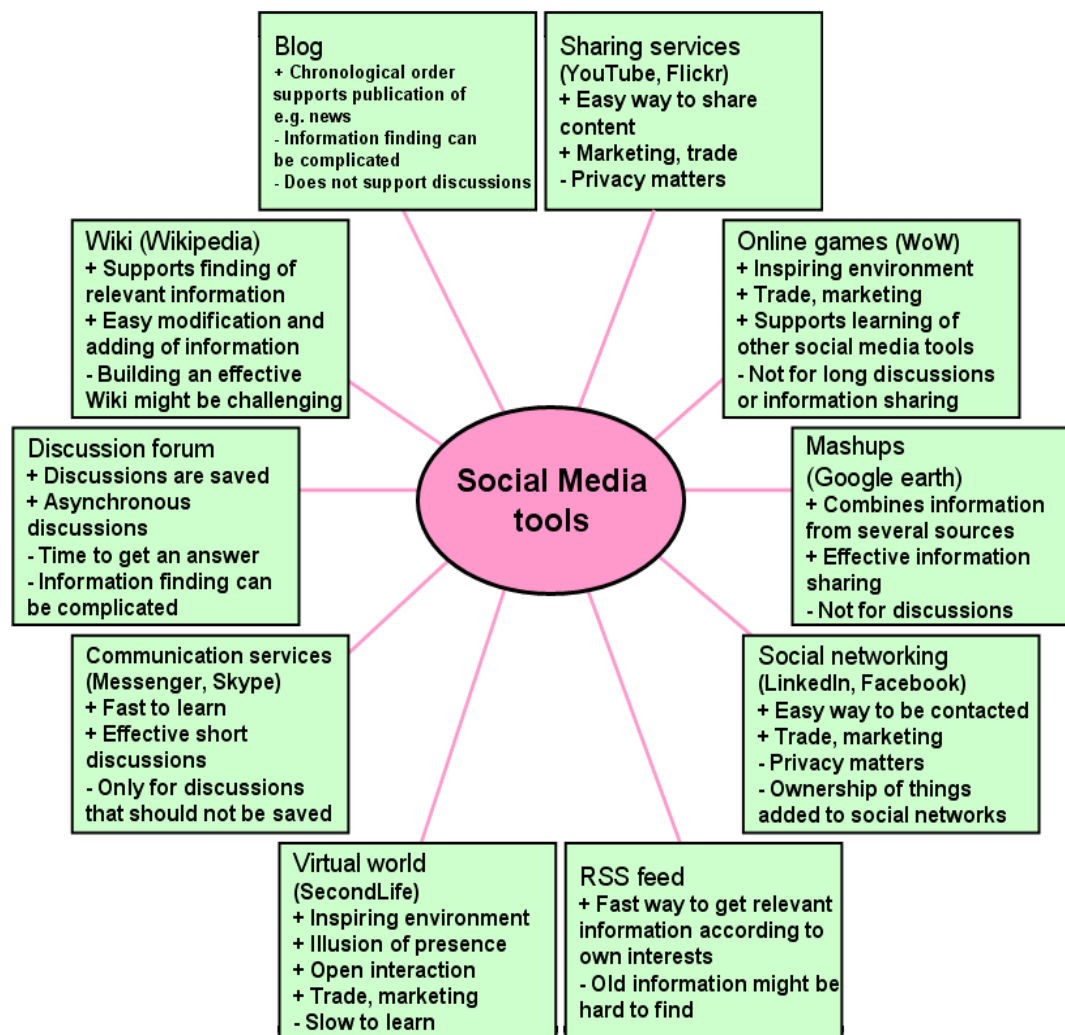


Figure 11. Strengths and weaknesses of Social Media tools (Modified from Melakoski 2007)

Figure 11 presents the strengths and weaknesses of commonly used Social Media tools on the Internet. Social Media tools that are relevant to organizations and their characteristics are described in detail below.

Blog

A blog is a Website that is usually maintained by one person or in some case by a group of people. A blog contains normally descriptions about happenings, ideas or

events in a chronological order. A key feature of a blog is that people can comment on it easily and that the texts in the blog stay as they were put to the blog. In many organizations blogs are used to present managers ideas to the employees. This is done for example at TietoEnator. Because of the chronological order of blog content, however, the finding of information can be complicated. (Ojala 2008; Tapscott and Williams 2008)

Corporate portal

A corporate portal is a framework of integrating information and people in organizations. These portals are used to centralize content contribution to employees through a secure user interface. Shared information can be personalized by employee's interests. An example of a corporate portal is Microsoft's SharePoint server.

Discussion forums

A discussion forum can be a Web page or part of the page where people can discuss freely about different subjects. Discussions are normally categorized under different subjects and old messages are saved to be scanned later on. Discussion forums save all conversations and are functional in asynchronous conversations. They can also be used as information bases although information finding might be complicated if the search is not well developed. (Holmberg 2008; Ojala 2008)

Communication services - Instant messaging

Instant messaging is a commonly used type of communication service. It is one of the first Social Media tools to be adopted for use in organizations. Instant messaging refers to real time messaging via connected computers in some network. (Ojala 2008) Instant messaging is a functional tool especially in short synchronous discussions that do not have to be saved for later use.

Mashups

Mashups are Web pages that connect the information from several Web pages to one Web page. Mashups are especially planned for effective knowledge sharing. Google Earth is one example about a mashup. It contains maps and detailed information from the places in the map. (Hintikka 2007; Tapscott and Williams 2008)

Social networking

Social networking refers to service that uses software to build a communities of people that are interested to explore the interests and activities of other members of the community. Facebook is an example for a very popular social networking service that connects people in the Internet. (Tapscott and Williams 2008)

RSS-feed

RSS-feeds (Really Simple Syndication) are Web feed formats that are used to publish frequently updating material in XML form. A feed can be ordered from many Web pages and it is sent to the subscriber when the content of the Web page changes. RSS can be used to compensate emails, for example. (Hintikka 2007)

Virtual world

A virtual world is a simulated environment that is normally open to anyone to access. Users are able to inhabit the worlds and interact with each other in a form of avatars. These avatars can freely move around different worlds and meet other avatars controlled by other users. Second Life is a virtual world that is used all over the world. It has received over one million check-ins in two months. (Holmberg 2008; Lietsala 2008) Virtual world is an inspiring three dimensional world that can be utilized to improve, for example, synchronous communication happening from different locations.

Wiki

A wiki is a collection of linked Web pages that can openly be edited by users. Users can add new pages and new links between wiki pages easily. Wiki is an effective tool for sharing knowledge. Free dictionary Wikipedia on the Internet is the most well known wiki. Ojala (2008) states that wikis are mostly used in companies from all of the available Social Media tools. She claims that an internal corporate wiki is like an Intranet except that it is free and everybody is allowed to edit it. According to Tapscott and Williams (2008) wikis are going to be the standard tools (like e-mail and instant messaging) in workplaces.

5 Process and methods for developing Knowledge Management through Social Media in the case organization

This chapter focuses on the process and methods utilized for developing Knowledge Management in the case organization Fidenta. Corporate knowledge management can be developed from many different points of view. This thesis focuses only on development that can be achieved by Social Media use alone. Reasons for choosing the development process and the particular employed methods used are presented here. The use of the methods is also described in this chapter.

5.1 Process of developing Knowledge Management

There are many alternative approaches to building a Knowledge Management system for an organization. Most approaches define a Knowledge Management systems life cycle (KMSLC) that describes the phases of building a Knowledge Management system. Awad and Ghaziri (2004) present a Hybrid life cycle that combines these different approaches. Their process starts with evaluating the existing infrastructure in an organization, forms a Knowledge Management team, captures knowledge, designs relevant Knowledge Management architecture, tests the system, implements the system, manages the change and reward system, and ends with the evaluation of the implemented system.

The Knowledge Management development process used in this thesis is based on the hybrid life cycle and is presented in Figure 12. The Hybrid life cycle's stages are completed by the phases of the *quality planning roadmap* (Juran 1986) to make sure that the quality of the corporate Knowledge Management system is improved. The development process of the thesis consists only of some phases of the Hybrid life cycle because the development focuses on corporate actions that can be improved with the help of Social Media. Implementation of the system is beyond the scope of this thesis. That is why the development process of this thesis ends with the definition of operational models needed to utilize the Social Media functionalities in the organization. The phases of the quality planning roadmap are presented in Chapter 2. They are (1) Identify the users, (2) determine the user needs, (3) develop the product, service or process features to meet user needs, (4) develop the existing

processes to produce the defined product, service or process features, (5) prove the process and (6) transfer the process to the operational area. (Juran 1986, Gibbons 1994; Godfrey and Juran 1998)

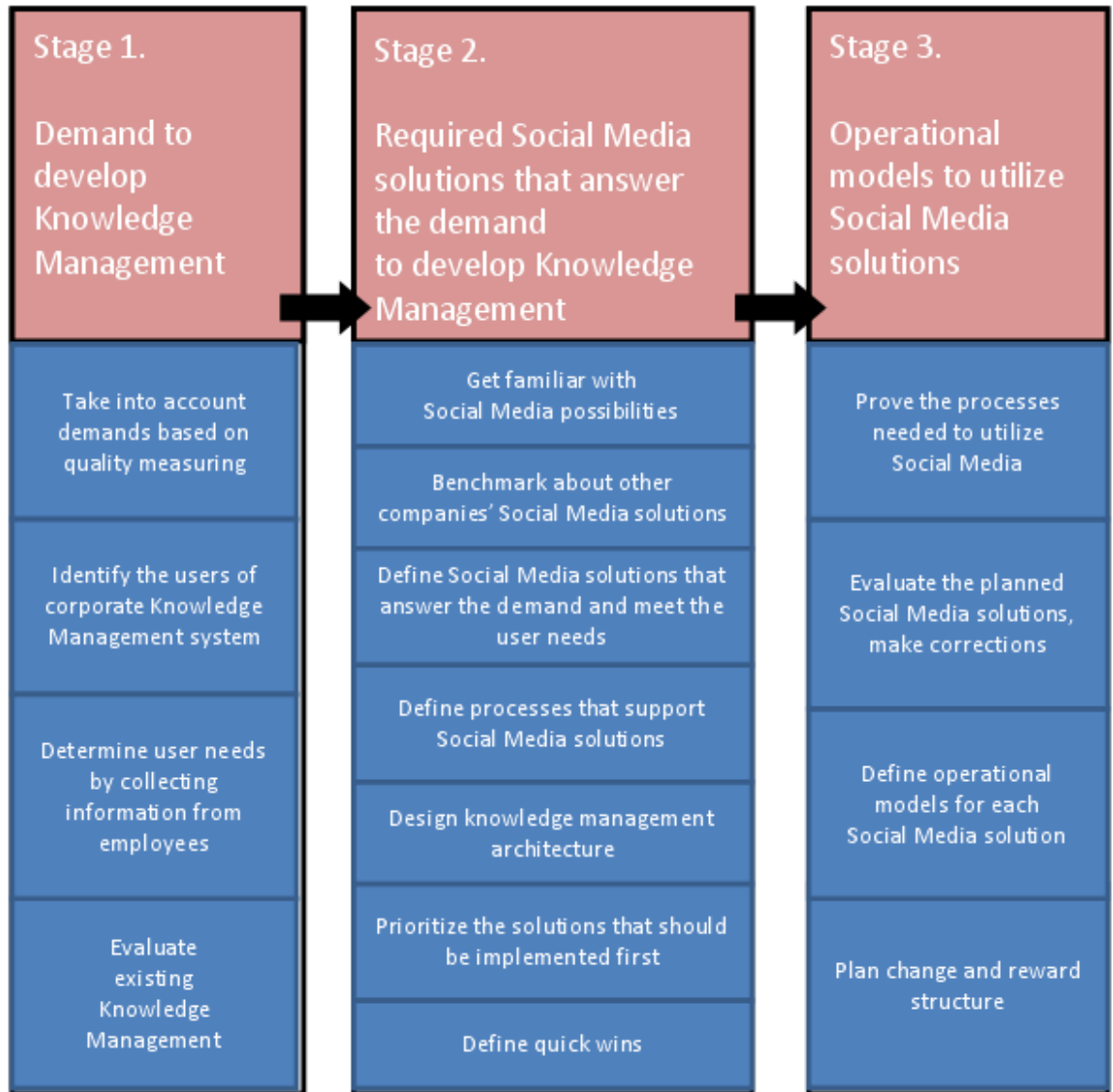


Figure 12. Knowledge Management development process of this thesis

The first stage in developing corporate Knowledge Management is to define the demand to develop Knowledge Management (Figure 12). This is done by evaluating the existing Knowledge Management, taking into account needs based on quality measuring and collecting information from the employees. Information is collected from the employees according to the *quality planning roadmap's* first phase of identifying the users and evaluating the existing Knowledge Management. This

includes determining user needs as in the second phase of the quality planning roadmap.

All employees of the organization are the users of the Knowledge Management system. Employees have different needs for the system based on their responsibilities and that is why the different needs to use the Knowledge Management system have to be identified and profiled. Employees will use the Knowledge Management system and its tools as planned only if the functionalities of the new solution are entered into the daily working processes of the organization and they feel that the new functionalities offer some new advantage compared to the use of the old solutions. In addition to that, the first stage includes taking into account the previous quality measurements made in the target organization and evaluating the existing Knowledge Management. This is achieved by finding out corporate problems in communication, knowledge sharing and innovation management inside the organization. In the last stage of the process possible ways to motivate employees to adopt the new Social Media solutions are researched.

The second stage is to define Social Media functionalities that answer the demand to develop the managing of knowledge. This stage includes developing the Social Media solutions to meet the user needs from the *quality planning roadmap* and developing the existing processes. This stage is executed through benchmarking other companies that have implemented Social Media solutions and getting familiar with Social Media possibilities. Based on this research and the results of the first stage, the new Knowledge Management architecture is defined. The Social Media functionalities are prioritized and easily corrected *quick wins* are described. These quick wins are small improvements for the company that have a significant impact on the Knowledge Management development.

Third stage is to discover operational models that make it possible to utilize the defined Social Media solutions in the target organization. This stage takes care of aspects dealing with organizational culture and people. It includes proving that the process is suitable for the target organization which is the second last phase of the quality planning roadmap. Employee competences to use Social Media functionalities are studied and the change and reward structure planned. At the end of

these three stages, results are evaluated and corrections are made to the planned architecture if needed. The last phase of the *quality planning roadmap*, transferring the process to the operational area, is not part of this thesis.

5.2 Methods

User centered design methods are used in all three stages of the Knowledge Management development process; in defining the demand to develop Knowledge Management, in finding the Social Media solution to answer that demand and in defining appropriate operational models of starting to use the solutions in the organization. User centered design methods are used instead of traditional Knowledge Management methods - like knowledge mapping, black boarding or concept mapping (Alavia and Leidner 1999; Awad and Ghaziri 2004) – to be able to give all employees a possibility to influence the improvement of existing Knowledge management system.

User centered design methods concentrate on the usability of systems from the point of view of users. Usability is defined as the extent to which a product can be used by a specific user to achieve specified goals with *effectiveness*, *efficiency* and *satisfaction* in a specified context of use. *Effectiveness* describes if the users are able to complete tasks and achieve their goals with the tools. *Efficiency* refers to efforts made to achieve the goal and *satisfaction* describes whether the user was satisfied with the ease of use. (International Organization for Standardization 2008; UsabilityNet 2008)

This approach of developing Knowledge Management from the user point of view with the help of user centered methods is chosen, because the toughest part of developing Knowledge Management is the aspect with people and organizational culture. (Liebowitz 2005) This means finding a solution that offers benefits to all users and convinces them to use the offered tools. Traditionally a Knowledge Management system is planned by a small group of people, for example, upper management or communication unit of an organization for the use of the whole organization. User centered design gives instead the control of design to all users or user groups of the system. In the managing of knowledge it is crucial that most

employees use the system so that the organization is able to collect as much relevant knowledge as possible for the use of the organization. User centered design methods offer employees possibilities to contribute to the result already in the early stages of planning the result. If most users have a possibility to take part in planning, it is probable that they will feel more satisfied with the system ultimately designed.

Information that is provided to the users should be useful, accurate and easy to find and utilize. Since the demand and possible problems have been defined, the Social Media functionalities answering the demand can be found. User centered methods offer ways to design a Social Media based Knowledge Management system that answers the needs of the employees. Operational models of starting to use the functionalities are also easy to define when the focus of design has been with the users for the whole design process. Operational models are models that describe for example, how a solution should be planned in detail, built and implemented and how the corporate processes and ways to act should be developed to support the new solution and desired mindsets.

The chosen user centered methods to evaluate and develop Knowledge Management in this Master's thesis are *probe*, *user survey*, *interview* and *brainstorming*. These methods and reasons for choosing them are presented in detail in the following sub-chapters. The stages of the research (where methods were used) are described in detail in Chapter 6.

5.2.1 Probe

A probe is normally used to collect information about user's opinions and experiences. It can be, for example, a collection of artifacts, a camera, a recorder, a piece of paper with inspiring questions or a diary that help users to explain the usage situations by description, pictures, sounds, drawings, etc. A probe helps the designers of a planned system to get users to participate in the design process and support interaction with the designers and users. (Mattelmäki 2006) This idea of getting near the users is important because the new Knowledge Management system is used as planned only if the users feel it beneficial and workable. Users have the possibility to influence to the design, which will give a feeling of being noticed and activate the level of interest towards the planned system.

In this thesis probes (Appendix A) were utilized to get the opinions and viewpoints of the employees in an informal manner. This informal starting point was chosen to inspire free communication about the research subject in the company and to get anonymously comments about the research focus from the users. The probes were used to stimulate discussion about the case organization's knowledge distribution, communication and innovation management. The probes were distributed to all business units' break rooms to give all employees a possibility to openly express their feelings and in a situation that is usually not formal. User observation was another method that was considered as a way to collect employee opinions about the research subject in a real knowledge sharing and communication situation. However, probes were chosen to inspire all employees to think about the research subject by giving them a possibility to participate and not only to be under observation.

5.2.2 User survey

User surveys are used to collect information from users while defining requirements of a particular solution. They can also be used to collect information about existing ways to perform a specific action or to collect knowledge about employee awareness and competences regarding some well known tools or applications. While planning a survey it is important to make questions that provide the information that is meant to be obtained from the users. It is also important to make sure that the people answering the questionnaire understand the purpose of the survey as well as the questions to maximize enrollment level and validity of the results. Traditional surveys which were to be sent to users by post are nowadays sent via Internet. (UsabilityNet 2008)

In this research a user survey (Appendix C) was provided to users through the case organization's Intranet. The survey was first tested by one person to make sure that the questions were understandable. The survey was evaluated to verify the functioning of the survey and to remove its possible usability problems. According to usability experts (Nielsen 1993) already an evaluation with one person is enough to remove the main usability problems. The survey was available for a week and it was promoted through an advertisement text in the Intranet as well as in the business unit meetings. All employees of the company had a possibility to give their opinion about the planned Social Media solutions by participating in this survey. The participant's

age and work assignment were required as background information to form a picture of the people that replied to the survey. The results of the survey can be found from Appendix E. Web based user surveys were chosen because they were able to collect data easily from a large number of people. The survey's answers were supported in interviews to verify the collected results and to get more detailed information to the survey questions.

5.2.3 Interview

The idea of making interviews is to get more detailed facts and opinions from potential users of the planned solutions. Normally an interview is conducted by one person interviewing one informant at a time. In interviews the risk of misunderstanding the informant is not as great as with distant methods like, for example, with survey or user observation, because the interviewer and informant can freely discuss the questions. (UsabilityNet 2008)

In this thesis interviews provided detailed information about the planned Social Media solutions. Informants evaluated the functioning of the solutions in their work and gave development ideas about the solutions. There arose some questions about the solutions from the user surveys and these questions in particular were asked during the interviews. Interviews offer a lot of detailed information from the group of informants but they are time-consuming and were thus utilized only to clarify the results from other methods.

5.2.4 Brainstorming

Brainstorming is a method of facilitating group creativity. A group of people take part in a brainstorming session to focus on a problem or a proposal. One person facilitates and leads the session. Normally there are two phases in the session. The first of them concentrates on generating freely ideas and the second one of them evaluates the quality of the ideas. The phases might consist of many different parts. It is important that in the first phase of the brainstorming session the ideas are not judged or criticized. (UsabilityNet 2008)

In this thesis different brainstorming sessions were used to generate new ideas and solutions based on the collected results. The brainstorming method was chosen to

make solution development effective, systematic and to get as many ideas as possible. The brainstorming groups consisted of members of this project. In the first brainstorming session ideas were generated in pairs and it was based on the demands that needed a totally new solution. This pair work helped to find totally new solutions. In the second brainstorming session ideas were generated through open discussion in the group in order to solve the demands by improving existing solutions. The third brainstorming session concentrated on finding out future tools and operational models that should be utilized in the case organization. In this brainstorming session everybody generated ideas first alone and then presented them to the group. All solutions were written down on paper and posted to the wall at the time of generating ideas. At the stage of evaluating the ideas, solutions were first organized into groups based on their similarity and then evaluated by awarding points to the best ideas. Some pictures from the third brainstorming session are in the Appendix B.

6 Knowledge Management development in the case organization

The focus of this chapter is to describe the progress of Fidenta's Knowledge Management development project and its connection with the theoretical approach of this thesis. The project concentrated on developing Knowledge Management in the software company Fidenta by Social Media utilization. The experimental part of this thesis is based on the project that was executed in Fidenta during spring and summer 2008. This chapter presents how the methods of developing Knowledge Management were used and utilized in the case organization. The three stages of the project – (6.2) demand to develop Knowledge Management, (6.3) Social Media functionalities that answer the demand and (6.4) finding operational models for utilizing Social Media functionalities - presented in the previous chapter are described. Collaboration with other ongoing projects at Fidenta is also covered in this chapter.

6.1 Scope of Knowledge Management development

Developing Knowledge Management in the target organization concentrated on developing knowledge distribution, communication and the emergence of innovations from the point of view of internal Social Media utilization. These goals are strongly related to the goals of this thesis already presented in the introductory chapter:

- How to utilize common explicit and tacit knowledge more effectively?
- How to develop internal work tasks targeted communication?
- How to boost the emergence of innovations?

The Knowledge Management development project was implemented in cooperation with another project at Fidenta, which concentrated on the technical development of Fidenta's Intranet. The output of the Knowledge Management development project is delivered to this project and it will take care of the implementation of new features. That implementation is based on a corporate portal Microsoft Office SharePoint Server.

6.2 Demand to develop Knowledge Management

The purpose of the project's first stage was according to the *Knowledge Management development process* (Figure 12) to define the demand to develop Knowledge Management. This was accomplished by evaluating the existing Knowledge Management at Fidenta, taking into account needs based on quality measuring and collecting information from the employees as described earlier. Because the demand to develop Knowledge Management is to be solved through Social Media utilization, the demand for development was also examined from the Social Media perspective. The employee possibilities to share their opinions, experiences and insights were examined as well as the Social Media tools that are already used inside the company.

Evaluating the existing Knowledge Management required taking into account previous quality assessments made. Attention was paid to the results of quality measurements by collecting all results from previous CMMI, EFQM and ISO 9000:2000 measurements made in the target organization. The CMMI results were from the year 2007 and the EFQM results were from 2008. The results relevant to this project were organized in groups based on their connection to knowledge distribution, communication and the emergence of innovations. This information helped to form the goals of the project. The advantages and problems of the existing Knowledge Management system and its tools were gathered with the help of the project group through a questionnaire that was submitted to ten persons in Fidenta. This information helped to form questions that employees needed to be asked about their needs and problems with the existing Knowledge Management.

Information about employee's needs and problems with the existing Knowledge Management was collected with the help of probes that were distributed to all business units' break rooms. Probes are normally used in the usage situation, for example, in the situation where knowledge is transferred from one person to another. There are many possible usage scenarios, where knowledge is transferred in the target organization. Break rooms were chosen, because in break rooms knowledge is transferred in an interactive and informal manner. At the moment the tools of the tar-

get organization do not support very interactive knowledge transfer, so a physical location was chosen instead of a virtual location.

The probes were built based on the material previously collected as well as the focus areas of this research. They were planned to reveal positive and negative opinions about existing ways to communicate, to share and gain knowledge and to innovate. The probes consisted of two A3 pages having texts of different attitudes to inspire all employees to participate filling the pages with opinions. Impulse texts were in the form of mind maps. The first page had a positive attitude: *“Generate ideas about a better Fidenta”* and in the beginning it had four mind map balloons *“This is how I reveal my information”*, *“This is the way I want to share my ideas”*, *“This is how I would find the information”* and *“This is how I get my ideas delivered”*. The attitude of the other paper was more negative: *“Grumble about work”*. It also consisted of four mind map balloons having texts *“Why doesn’t the person who knows tell?”*, *“Where do all ideas disappear?”*, *“Why am I not able to find information?”* and *“Why are my messages not coming across?”*. The papers were filled during one week and then collected and the gathered results were organized. Examples about the probes are presented in Appendix A.

6.3 Defining required Social Media functionalities

Some demands that were defined in the first stage of the project can be solved by changing the corporate culture according to Social Media mindsets and operational models or by finding new ways to use and encourage the use of an existing solution. Those demands were observed in the last stage of the project. This stage – defining the required Social Media solutions that answer the demands – focused instead on finding new solutions or modifying existing solutions to develop the organization’s actions. Besides finding the solutions to answer the demands, possible future solutions for communicating, distributing knowledge as well as for innovating were considered.

As explained in the *Knowledge Management development process* (Figure 12) this stage was achieved by getting familiar with the Social Media possibilities, benchmarking other companies’ decisions, generating ideas for future tool

possibilities and finally designing new Knowledge Management architecture. The solutions were also prioritized based on the criticality of the demands that were answered in the organization. *Quick wins* that can be easily fixed without major expenses were also defined. Examples of quick win solutions are the removal of registration or renaming a discussion area with a name that makes users think it is meant for them.

Getting familiar with Social Media possibilities and benchmarking solutions from other companies was made with the help of literature and by attending seminars. Generating ideas for future tools that should be used in Fidenta was made through a questionnaire to ten Fidenta employees. The employees described their ideas that could improve their ways to distribute knowledge, communicate and generate ideas in Fidenta.

Based on the demands that were found in the first stage of the project and the ideas that were collected from Fidenta employees, brainstorming sessions were held with the project group. As a result of the sessions a list of possible solutions to demands and a graded list of future solution that Fidenta should consider were defined.

After the brainstorming sessions a user survey (Appendix C) was made about the planned solutions to all employees of the company. This survey collected more detailed information about the possible solutions and was available for a week in the target company's Intranet. After collecting the results from the questionnaire, the possible solutions were developed based on the results. Fidenta employees were interviewed about the final solutions to clarify the final changes that were made based on the user survey.

6.4 Defining operational models for utilizing Social Media functionalities

Operational models are needed to change the way to act at work in Fidenta. Operational models vary depending of the solutions and include, for example, piloting instructions, training needs, demand for moderators, building instruction and ways to activate employees to use the offered solutions. Some defined demands can be solved just with the help of new operational models that help to change the way to

use an existing solution. Many operational models that are to be solved through new operational models came up already in the brainstorming sessions and questionnaires of previous phases of the research. This stage of the project concentrated on the solutions defined in the previous stage of the research. All these solutions should have operational models defined to guide the use of the solutions and tell how to utilize them in practice because new solutions do not solve the demands if they are not used as planned.

This stage of defining the operational models for the Social Media solutions was performed by finding the operational models, planning the change and reward structure and by evaluating the planned solutions and making corrections to them as described in Figure 12. Each solution was gone through separately in a brainstorming session. Each solution had questions that were defined before the session and these were answered in the brainstorming session. The group was not able to answer all questions and unanswered questions were asked from the decision makers of the target organization in separate interviews. All solutions and their operational models were presented to two target persons and some fine adjustment was made to the operational models. After that the solutions and operational models were presented to all managers of the target organization. Solutions were refined by the comments of the managers and the managers decided which solutions were to be implemented in the target organization.

7 Results

The focus of this chapter is to present the results of the Knowledge Management system development project that was executed in the target organization. The results are divided into groups based on the three stages of the Knowledge Management development process (Figure 12) - demand to develop Knowledge Management (7.1), Social Media solutions that answer the demand to develop Knowledge Management (7.2) and operational models to utilize the Social Media solutions (7.3). These results are presented here and are analyzed and discussed in the following chapters.

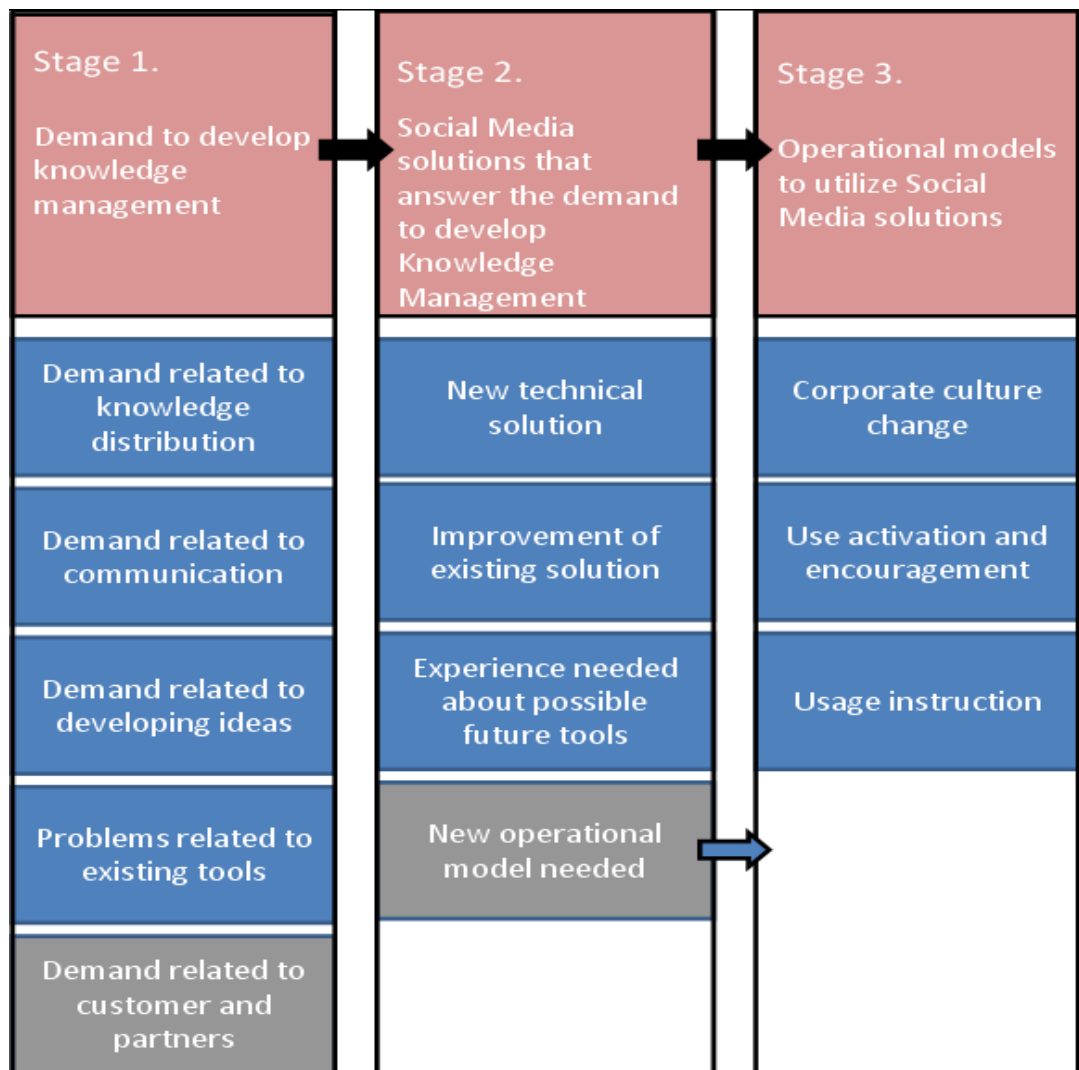


Figure 13. Gathered results from the Knowledge Management development process

All results gathered were sorted according to the material into different groups as presented above in Figure 13. Only the results that are indicated in blue were analyzed further in this study. On the first stage of the *Knowledge Management development process*, some demands related to customers and partners were defined. These demands were not examined further because the scope of the research is limited to the internal working practices of the case organization. The demands related to customers and partners were made aware in the organization. During the second stage some demands required only a change of operational models to be solved instead of a completely new technical solution or improvement of an existing solution. These demands were forwarded to the third stage of the project, where all operational models were defined.

7.1 Demand for Knowledge Management development

All results that were gathered from the first stage of the project – *Demand to develop Knowledge Management* - were collected together and organized to five groups based on the collected material (Figure 13). The first three groups are related to the goals of the thesis – demand for developing knowledge distribution, communication and developing ideas. The other two groups that were formed are problems related to existing tools and demands related to customer and partner organizations.

All results are presented and categorized according to their criticality and type in Appendix D. The different levels of criticality are defined based on the demands effect to the company's business success and the amount of actions or employees that they affect. The need for a system that captures a project's knowledge is an example of a serious need. Continuous knowledge losses between projects are strongly related to the business success of the target organization. Instead of losing some of the knowledge that has arisen in a project, the company should utilize the relevant knowledge systematically in future projects. Another example of a less serious demand is the need for a blog of the managing director. Employees wish to hear more about the company's management's opinions. A blog might be a good and informal information channel between, for example, managing directors and the employees but it is not seen as necessary for a company's success.

The type of the demands also varies. Some demands require a totally new Social Media solution, some can be solved by changing an existing solution and some demands can be fixed by having informative meetings, a change of attitude or by giving guidance to a specific group of people. A better possibility to develop ideas is, for example, a demand that requires a totally new solution at Fidenta. The development of ideas has not been systematical and email is the tool that has mostly been used to transmit ideas to management. There is no existing solution for idea development and it needs to be planned from the very beginning. Developing of an existing solution is necessary, for example, in the case of the instant messenger tools used in the target organization. The instant messenger does not support the exchange of documents between more than two people and its functioning is unreliable. Most demands need operational models so that they can be solved in practice. In any case, some demands can be solved only with new operational models. An example of this kind of demand is the way to motivate people to use Outlook calendars or to get people to use instant messenger or the internal discussion forum offered by the company.

Fidenta has offered some Social Media tools for the use of the employees. Instant messaging is possible and about half of the employees use that possibility. Others are not interested to use instant messenger because they feel that it is disturbing their work or they do not see any benefits from using it. Also a discussion forum has been established at Fidenta about half a year ago. This forum has not yet gained a lot of users and only one fourth of the employees have entered the forum once and the most users ever online simultaneously were six people when the forum was established. The discussion forum has not been advertised much at Fidenta and the name of the forum encourages only some developers to go to the forum. Employees from other work assignments do not feel that the forum is meant for them. Fidenta has also had a blog for knowledge sharing, but it did not function very well, because of some technical problems with copying information from the blog. Nevertheless the main problem with the blog was that it was used for sharing guidelines and instructions instead of its meaning of sharing ideas in a chronological order. The blog grew too big and the information was not anymore found from the blog. The chronological

order did not help people to find the information they were seeking, from the flood of information contained in the blog.

Employees can search information from three different Intranets. Fidenta is owned by two organizations and Fidenta's employees have rights to enter the owner companies' Intranets as well as Fidenta's own Intranet. Although the other Intranets are open to Fidenta employees, networking problems are however evident. Remote working or working outside Fidenta's network is currently challenging. Fidenta's Intranet needs to be accessed from outside the company or other easy ways devised to have important documents available on employee laptops outside the company network. Communication possibilities with partner companies should also be improved in future.

There is a lot of information available for the employees in the Intranets, but the problem is that a specific piece of information that an employee is trying to find is hard to locate. The search engine should work in a better way and there should be a possibility to search information from a specific area of the Intranet. Fidenta has defined a link list of commonly used subjects to help employees to find information. This is widely used among employees. Fidenta's Intranet development is proceeding at the moment in the company and also the results of this project will be used to improve the Intranet.

The sharing of information through the target organization's Intranet is complicated at the time of this research. Only a small group of people have rights to add, update or remove information from the Intranet. This is a matter that should be improved in Fidenta, because too strict permissions to add information prevent sharing of information in the company. Fidenta should define at least some areas where employees are allowed to share their information freely. Besides these more official information sharing areas, all employees should also have a possibility to interact with each other in more informal ways.

The sharing of documents between employees of the organization happens via email, through document storage system or through common servers. Customer and partners do not have rights to enter Fidenta's common servers. That is why email is

mostly used to share Fidenta's documents with them. This is not very effective and a customer or partner always has to ask for documents when they are needed. Fidenta has started a trial to use Microsoft's SharePoint to provide virtual workplaces for projects. This has been successful being popular with employees and virtual workplaces will in the future be offered to all employees of the company. Also the customer will have rights to enter to some workplaces.

E-mail and phone are commonly used for communicating. The phone is good for fast conversations that do not need to be saved for further use. Sending e-mails is fast and all the old mails are saved to the mail box. The problem is that sender cannot be sure if the message has been read and the time to get the answer might be long. Going through all e-mails and answering those takes a lot of time from other work activities. Most mails could be compensated for some other way and especially the amount of mass mails should be reduced to a minimum. The younger generation especially is also using instant messaging for the conversations that do not need to be saved, offering a quick way to share short messages.

Idea development possibilities are rare among most employees in the target organization. Many employees commented that they share their ideas just to the people that they spend their time with at work. The sharing of ideas happens normally face to face at the lunch break. Employees commented that usually they do not have time for developing their ideas. The volume of invoicing tasks is also felt as a very important matter that prevents employees from using time for generating ideas. Another matter that also prevents idea development is that employees need to ask permission to use a couple of hours for developing something. If the permission should be asked from the managers or even from the executive management team, it is not probable that the employee even asks the permission. The idea is forgotten and sometimes transmitted to the business unit manager. Employees, who commented on this matter, told that they normally got the answer that the idea cannot be developed further or were left uncertain about the progress of the idea.

Managers nevertheless seem to be interested in idea development and the emergence of innovations. New projects have been established to encourage the emergence of innovations besides other matters and cooperation possibilities in innovating closely

with customers are examined. It seems that this attitude is just not transmitted to all employees. New operational models are needed to activate idea development and encourage people to share their ideas. New tools are also needed to support the exchange of ideas and their development.

7.2 Required functionalities of Social Media

The second stage of the *Knowledge Management development process* defined solutions that answer the demands to develop corporate Knowledge Management in the case organization. Some demands needed a couple of different solutions to be solved and several demands could also be fixed with only one solution. There were also some alternative solutions to some demands. The results of the Webropol questionnaire that was made at Fidenta are presented in Appendix E. This questionnaire collected more information about the functioning of possible solutions at Fidenta as described in the previous chapter.

The results of this stage were sorted into four groups based on the type of the solution needed – *new solution, improvement of an existing solution, experience needed about possible future tools and new operational models needed* (Figure 13). All results are presented in Appendix F and the most important of them are described in detail. The importance of the solutions is based on the criticality of the demands. Table 2 presents a list of the most important solutions and their operational models.

Table 2. Social Media solutions and operational models

SOLUTION	DEMANDS THAT THE SOLUTION ANSWERS	DESCRIPTION OF THE SOLUTION	DESCRIPTION OF THE OPERATIONAL MODEL
Wiki area Prioritization: Very high importance	<ul style="list-style-type: none"> • Need to develop employee possibilities to influence • Need to develop formal information sharing between employees 	<ul style="list-style-type: none"> • Open wiki pages and publishing rights to everybody (e.g. business relevant technical information and guidelines) • Pages that need moderators approval to be changed 	Building a wiki: <ul style="list-style-type: none"> • Make overall structure about wiki areas • Write instructions about building and using of wiki • Deliver the areas to moderators

	<ul style="list-style-type: none"> • Need to have an Intranet that has relevant, up to date information • Need to develop experience sharing between employees 	<ul style="list-style-type: none"> • Each wiki page should have meta-data that tells from which area it is • Search should find all wiki pages or only some area's pages • Name of the modifier should be shown in the wiki page • It is important that information is found from one place (links) 	<ul style="list-style-type: none"> • Moderator plans the structure of the own area • Moderator makes sure that own area includes all needed wiki pages • Moderator divides the work of creating wiki pages to employees • New wiki pages are created freely by all employees • Train and inform the employees
Interactive initiative base Prioritization: Very high importance	<ul style="list-style-type: none"> • Improved ways for idea development • Feedback possibilities • Defining "weak signals" 	ICT solution that is open for everybody in the target organization <ul style="list-style-type: none"> • Initiative form • Initiative base: Combines all employees, commenting and voting possibility • Define the business relevant information that organization wants to have from the base 	Culture that supports idea generation <ul style="list-style-type: none"> • Systematically applied innovation plan (time, money, commitment) • Innovation team • Employee training • Systematic discussion and use of initiatives by employees and managers • Logging of hours used for generating ideas • Rewards
Personnel index Prioritization: High importance	<ul style="list-style-type: none"> • More information about colleague competences, responsibilities and work assignments • More effective working because of effective way to find information about colleague competences 	<ul style="list-style-type: none"> • Search that includes all employees and possibility to search by different characteristics • Each person's own page should have personal information: Name, title and contact information, vacation, absence • Work information: Projects, Responsibilities, Work assignments, Groups, teams, Competences • Voluntary information: Blog, Discussions, Courses, etc. 	<ul style="list-style-type: none"> • It is important that all search criteria are related to each other. • All criteria should work as a link to the chosen area/page • User should have a possibility to modify his own page in the employee index

Solutions that support projects' life span (Project page, Project workspace) Prioritization: High importance	<ul style="list-style-type: none"> • Need to utilize project's knowledge in other projects. • Transparency: Employees need information about projects in the company 	<ul style="list-style-type: none"> • Execution phase: Project information to project page and project workspace for project group • Closure phase: Project workspace is saved in read-only format and an advertisement booklet is made about successful projects 	<ul style="list-style-type: none"> • It is important that information flows from application to another automatically • Project pages and workspaces should have common building instructions • There is need for a training event for all employees
Sales trigger collecting Prioritization: Middle importance	<ul style="list-style-type: none"> • Sales triggers should be collected and analyzed • Lost cases should be analyzed • Way to order from target organization 	<ul style="list-style-type: none"> • Sales trigger form • Sales trigger base • Create sales case or archive and analyze lost cases 	<ul style="list-style-type: none"> • Target organization's management should utilize the base while going through possible sales cases • It is important that information flows from application to another automatically
Virtual World Utilization Prioritization: Middle importance	<ul style="list-style-type: none"> • Off shore communication • Less traveling needed • Environmental aspects • More interactive communication 	<ul style="list-style-type: none"> • There is need to collect experiences about virtual world utilization in target organization. 	<ul style="list-style-type: none"> • Piloting instructions are needed • Security issues must be taken to consideration

Explicit knowledge sharing needs to be developed in the case organization. Both ways of sharing formal information and informal information, for example, experiences or viewpoints should be developed. At the moment publishing something to the Intranet of the target organization is restricted to a small group of people and sharing information is therefore not easy. Social Media tools support interactivity and openness. A wiki based solution would improve formal information sharing because it is easy to use and anyone could quickly correct existing knowledge or create a new wiki page to the company's wiki. Some areas of the Intranet, for example, technical guidelines should be open for everybody and some areas should have a moderator who should give an approval for a change. Informal information sharing would be improved by attaching the discussion forum to more official information or giving the users a possibility to comment on the Intranet content.

Demands for defining weak signals that are going to be relevant in the future and improving ways for idea development can be answered by a new idea generation process. The process of collecting initiatives (Figure 14) clarifies the way to generate ideas in the case organization and should be introduced to all employees. An open idea base makes it possible to develop ideas in the organization, where everybody can easily send an idea to this base by an initiative form that asks some basic information about the idea. All the ideas in the idea base can be commented and voted on by all employees. Ideas should be systematically gone through and presented to all employees to make sure that the solution works.

The process of collecting sales triggers (Figure 14) answers to the corporate demands to collect sales triggers systematically and analyze the lost cases. This solution can also be used to clarify the way to order from the target organization. A sales trigger form is used to enter a sales trigger or an order enquiry to the sales trigger base of the target organization. All triggers should end at this base and be prioritized, archived and analyzed. The base's information should be systematically used and especially the lost cases and reasons for losing these cases should be analyzed.

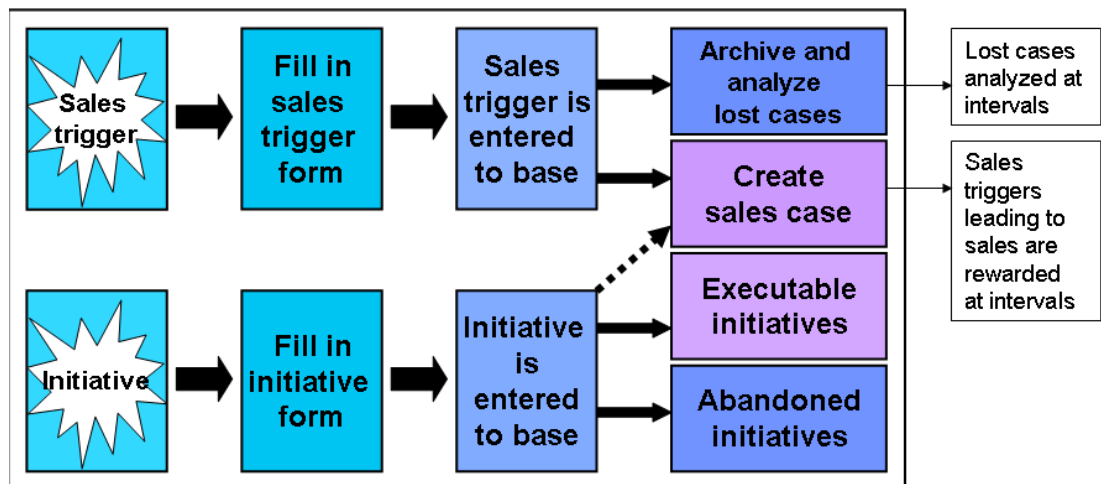


Figure 14. Process of collecting sales triggers and initiatives

Employees need more information about others competences and responsibilities. This can be developed by improving the existing personnel index. New index should contain information about a person's projects, responsibilities, duties, groups, work

spaces, competences and vacations besides contact information. The search should also include the information of the personnel index. Most of the information should come automatically from previous systems but some part of the information, for example, competences, courses attended, could also be updated by employees themselves.

The project life span model answers to corporate demands for utilizing a project's knowledge in other projects and disseminating the knowledge among employees. Also the employee demand to get more information about other employees' competences and responsibilities is answered with this solution. The project's life span model (Figure 15) defines a new way to control projects and all information related to them from the sales possibility to project termination.

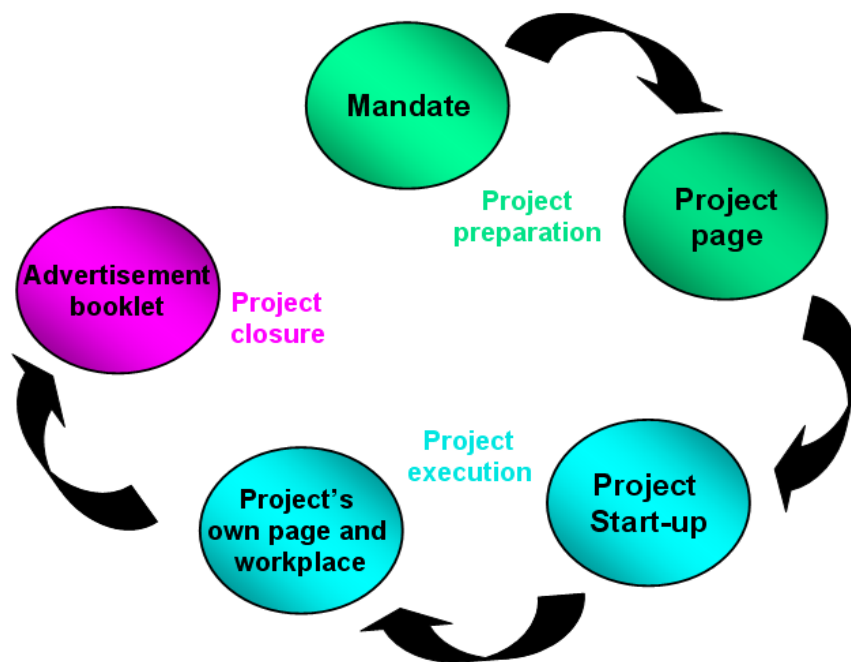


Figure 15. Solutions that support a projects' life span

The idea of the project life span model is that all project related knowledge is collected to the project pages that anyone in the company can access. These pages include the possibility to form a new project (mandate) with the help of a project start-up or use of search and go through existing projects. Each project has its own page that contains all project information and a link to the project's workspace. At the time of project execution, the workspace is used by the project group and

includes all material that the group needs for executing the project, for example, discussions, tasks and timetables. After the project termination the project workspace is changed to read-only format and used especially by project managers when beginning a new project.

Another critical demand in the case organization is to develop ways that support tacit knowledge sharing. Tacit knowledge sharing can happen when people can communicate freely and over organizational boundaries, and when the corporate attitude is ideally matched to knowledge sharing. For good work related communication people need common electrical workspaces to meet each other despite the location. Workspaces should be openly created by anyone who has a need for an electrical workspace and especially for those people from different business units working on the same work assignments. Because the case organization works using an open-plan office situated in one location, an additional team room – a work space with computers and supporting atmosphere could support tacit knowledge sharing and work communication among employees.

Besides demand related solutions, also weak signals that the case organization should utilize in the future were defined in the project. The most important weak signal is to collect experience about utilizing a three dimensional virtual world at work. A virtual world could improve videoconferencing and other remote meetings by offering a place where to move as a real person. All presentation and meeting material can be easily presented in the virtual world. Travel costs would diminish as a result of this solution because this could compensate for some face to face meetings. Virtual worlds could also offer great training possibilities as well as improve team working between people from different business units or countries.

7.3 Operational models for utilizing Social Media functionalities

Three different types of operational models were identified and discussed in this research. These types are *corporate culture change*, *use activation* and *usage instruction* as presented previously in Figure 13. Corporate culture change refers to new kinds of mindsets that lead to new kind of behaviors. This means, for example, a mindset of sharing information openly and broadly which leads to behaviors where

the majority of employees are working as Intranet content producers. Use activation can be, for example, an encouragement, reward or a new way to systematically utilize and advertise the use of a specific application. It can also mean removing bottle necks that prevent the use of a specific system, for example, removing registrations or many different passwords that discourage users from entering the system. Usage instructions are instructions of the system use and they should be up-to-date, relevant and usable.

Table 2 (in the previous section) presents the solutions and operational models that will have the biggest impact on the development of corporate Knowledge Management if they are implemented and Appendix F includes all solutions and their operational models. Prioritization of the solutions (*very high importance, high importance, middle importance, low importance*) is based on the criticality of the demands that they answer, efforts needed to implement them and the difficulty and effort needed based on the required operational models. Very high importance means that this solution should be implemented in a short timeframe, whereas a solution with low importance would improve Knowledge Management but the demand is not that critical or the effort needed is very high.

Table 3 presents the solutions that can be solved through new operational models. All these solutions require a training event about the tool use. Before the training events, it is important to make sure that the solutions are working as desired. The instant messenger should be improved as explained in the previous sections and the discussion forum should have a change to its name and have links that combine it to the other Intranet content. Calendar use is easy to improve by going through all calendars and by making sure that everybody has given rights to all employees to enter their calendar. Also instructions about good calendar use should be reminded.

Table 3 also includes the operational models that are related to all solutions. These are the necessary operational models that should be taken into consideration while implementing a new Social Media solution. A planned way to build and start using the solution is especially important while building a corporate wiki. Wiki offers a lot of freedom to users and to make sure that it includes all relevant knowledge, there should be a plan about the information that has to be written to it. Paying attention to

usability should always be a part of planning the solutions. The need for registration and passwords, difficult user interfaces or solutions that are not easy to learn to use reduces the amount of people using the solution and diminishes the efficiency. Furthermore, competing solutions confuse the users. It is better to have one solution that is meant for one task, for example, when changing from an old Intranet to a new Intranet; it is a good idea to make the old version only readable and not writeable.

Table 3. Operational models

SOLUTION	DEMAND	DESCRIPTION OF THE OPERATION MODEL
Operation models that are related to all solutions Prioritization: Very high importance	<ul style="list-style-type: none"> This is a list of necessary operational models to make sure that the solutions will be successful in the target organization 	<ul style="list-style-type: none"> Planned way to start using solutions is needed Usability of the new solution is better than the usability of previous solutions There should be no competing solutions Employees should be informed, encouraged and trained to use the solutions There should be moderators that are in charge of the solutions Systematical use of the information got from the solutions is important Mindsets of corporate managers should support the use of the new solutions There should be some control but it should not block sharing of knowledge and emergence of initiatives
Instant messenger use Prioritization: High importance	<ul style="list-style-type: none"> Employees should use instant messenger for short conversations that do not need to be saved Instant messenger should be used to be able to show the own status in work spaces 	<ul style="list-style-type: none"> Better instant messenger is needed (sharing of documents between several people) Training event is needed about the renewal and instant messenger's possibilities
Calendar use Prioritization: High importance	<ul style="list-style-type: none"> Appointment should always be made through Outlook 	<ul style="list-style-type: none"> Campaign about correct calendar use and about bringing it up to date Everybody should give other employees access rights to the own calendar
Discussion forum use Prioritization: Middle importance	<ul style="list-style-type: none"> Discussion forum is not used Need to find ways to support knowledge sharing 	<ul style="list-style-type: none"> Discussion forum should have another name and it should be linked to Intranet Everybody should be registered in the forum Well defined division between information that should be in discussion forum or in company's intranet is needed

Employee encouragement, informing and training have an enormous impact on the success of the new solution. The solutions are not going to be successful if the users are not able to use them as planned. Moderators are needed to follow the functioning of the solutions and to answer the usage questions of the employees. The importance of a solution use and new information got from the solutions should also be systematically presented to the users. This encourages the use and makes sure that the solutions will not be forgotten. Continuous follow-up and informing of employees is especially important in case of collecting initiatives, ideas, innovations or other information that requires employee creativity. The positive attitudes of corporate managers and people in positions of responsibility towards the solutions are extremely important. People in charge should inform all employees about the importance of the new solutions and new ways to work. Employees should have freedom to use the solutions and possibilities to influence in the organization but there should also be some control. This control can be, for example, in the using of employees' own name in the Intranet instead of allowing publishing anonymously. This kind of control makes sure that the content quality stays high but it does not hinder the creativity of the users, sharing of knowledge and emergence of innovations.

8 Conclusions

The focus of this chapter is in interpreting the results presented in the previous chapter. Results are speculated upon and compared to the theoretical approach of this thesis. The reliability and validity of this research and the importance of the collected results are evaluated in this chapter. At the end of this chapter, the findings of this research are discussed and some recommendations are also given for future studies.

8.1 Result evaluation

Hinrichs (1997) and Nambisan (2000) state that nowadays Intranet has many purposes and a major impact on business making if it is utilized effectively. The results of the research of this thesis support strongly these opinions. An effectively utilized Intranet has a significant impact on corporate business activities, communication, knowledge sharing, emergence of innovation and corporate culture. Nambisan (2000) states that Intranet is not meant only for communication and information sharing although they are important functionalities of the Intranet. The more importantly Intranet is to empower employees and open upon the corporate culture by giving employees possibilities to influence. (Hinrichs 1997; Nambisan 2000)

The people-oriented viewpoint in developing Knowledge Management is important because the shift towards new operational models and towards more interactive and open corporate culture can happen only when employees have internalized the new ways to act. According to Liebowitz (2004) 80 per cent of Knowledge Management handles aspects with people and culture and only 20 per cent with technology. Aspects with people and culture include that the employees need to be informed and trained to use the new possibilities. The findings of this research support strongly the results of Liebowitz. Besides finding out suitable solutions for developing Knowledge Management, it is extremely important to find ways to encourage and convince employees to use and utilize the solutions.

A well working plan to start using the chosen solutions is also needed. This can be, for example, a roadmap that defines in which order the new solutions are to be tested

and implemented. Solutions can be piloted first with a smaller group of people and then offered to all employees. General instructions, a training event or personal instructions about the solution use are needed depending on the solution and the user. There should also be a person or a group in charge of each solution than can help and support the use and functioning of the solution.

One of the key findings of this research is the importance of having a block of employees as Intranet content producers instead of a centralized communication unit that is only responsible for content management. This gives employees an important possibility to influence and share information. It also keeps Intranet content more relevant and up to date. For example, a wiki solution can be offered to employees for producing Intranet content easily. Table 4 presents a SWOT analysis focusing on employees working as Intranet producers in the target organization.

In the SWOT (Table 4) analysis the strengths and weaknesses recognized are related to internal aspects of the analysis focus. These aspects are the strengths and weaknesses of the employees of the target organization in work as Intranet content producers. The recognized opportunities and threats (Table 4) are external to the analysis focus. In this case they are opportunities and threats related to the work environment of the organization. Strengths and weaknesses are cross-indexed and analyzed with opportunities and threats in the middle of Table 4.

Strengths that support opportunity utilization are the systematical support and monitoring done by the management as well as employee encouragement to knowledge sharing. Strengths that block the threats are a followed plan to increase employee's acting as Intranet producers and publication modifiers that take care about the progress of a specific Intranet area. Weaknesses that may prevent opportunity utilization are too strong negative attitudes towards open information sharing and managerial support that is lacking. Weaknesses that may prevent threat blocking are negative attitudes together with a badly working system and over cautiousness in customer relations.

Table 4. SWOT analysis with focus on employees working as Intranet content producers

EMPLOYEES WORKING AS INTRANET PRODUCERS	STRENGTHS <ul style="list-style-type: none"> • Attitudes and experiences • Digital natives (about 10% of employees) • Willingness to learn • Willingness to support colleagues 	WEAKNESSES <ul style="list-style-type: none"> • Attitudes against Social Media based Intranet (90 % digital immigrants) • Information hiding instead of sharing • Fear of losing face
OPPORTUNITIES <ul style="list-style-type: none"> • Technology company background and culture • Needs of project organization and customer projects • Management mindset towards Intranet use 	<u>Strengths that support opportunity utilization</u> <ul style="list-style-type: none"> • Continuous management support and monitoring • Champions publicly rewarded 	<u>Weaknesses that may prevent opportunity utilization</u> <ul style="list-style-type: none"> • Too strong negative attitudes • Missing continuous management support in critical phases
THREATS <ul style="list-style-type: none"> • Intranet functionalities • Intranet content difficult to find or out of date • Time pressures • Importance of invoicing • Customer interface limitations (Extranet) 	<u>Strengths that help to block threats</u> <ul style="list-style-type: none"> • Systematical and planned way to increase employee acting as Intranet producers. • Publication modifiers 	<u>Weaknesses that may prevent threat blocking</u> <ul style="list-style-type: none"> • Attitudes together with badly working system lead to ineffective Intranet use • Over cautiousness in customer relations

Other central observations that are related to the many solutions of this research (Appendix F) are the importance of the systematical use of the solutions and the employee possibility to influence the decision-making of the organization. A critical mass of users is needed to come up with successful initiatives or sales cases. For example, the solutions project page, sales base and initiative base will be successful only if their information is used, commented on and presented systematically by management or other deciding persons. Besides that employees should be able to comment, discuss, modify or give feedback related to the information. The employee's possibility to participate and influence in the organization facilitates

creativity and open communication. This effects to emergence of innovations and corporate culture as explained in the chapter Knowledge Management. According to Tapscott and Williams (2008) the possibility of employees to influence an organization is beneficial for the company because the company benefits in an increasing amount of ideas and innovations made and in more effective working practices. A stronger work motivation is also a boost to innovation. Influence possibilities also effect positively employee satisfaction and an eagerness to stay in the organization.

Although operational models and all people-oriented aspects are very important, they are not enough if the planned solutions are not easy to learn and use. The new system should be better than the previously used systems to obtain users. It should also be advertised and well instructed. The functioning and use of the system should be followed. Possible problems that prevent or reduce the use of the system should be discovered and overcome. An important matter is also the fact that there should be only one system for each operation. Competing solutions and information that must be entered to and searched from various systems causes incoherence, employee frustration and may lead to the abandonment of the new system. Discussions and commenting possibilities should be related to the formal Intranet content and found easily.

One observation about the result is that also some very small features and improvements can have considerable effects on behavior. An example of a small feature is a name of the discussion forum that has been preventing people other than developers from entering the forum. Also a small feature like the message heading of an email affects the efficiency of finding an email from the archive. A small improvement like removing a registration can also have massive influence to the use of a specific system.

Besides all solutions that are relevant at the moment, a company should keep in mind that the technical evolution of the Web and the emergence of new Social Media applications and possibilities are rapid. A company should collect weak signals of the future tools and trends that should be utilized in the company in the future. This can be done with the help of the initiative base by encouraging employees to enter their

ideas about the future tools and predictions of the future needs to the base. In this research virtual world utilization and the use of Open Source Software applications were defined as matters that can be necessary for organizations in near future. These possibilities should be regarded as future possibilities for organizations and experiences about both of them should be collected.

8.2 Reliability and validity of the study

Social Media potentials were investigated in the target organization's Intranet to find out the answers to the research questions, which were:

- How to utilize common explicit and tacit knowledge more effectively?
- How to develop internal work tasks targeted communication?
- How to boost the emergence of innovations?

Overall, the objectives of this research were achieved, and the results of this thesis define improvements to the existing corporate Knowledge Management. These improvements are based on the Social Media possibilities that should be utilized in the target organization. New ways to utilize and share knowledge, communicate and new ways to boost the emergence of innovations were created in the target organization. The main causes behind the Knowledge Management problems were clarified and improvement recommendations were given. Social Media possibilities were researched and suitable solutions for the target organization were defined. Operational models for effectively exploiting the new solutions in the target organization were also designed.

The findings of this thesis can be considered as reliable in the target organization. The results can be considered trustworthy because they are in line with earlier research results in the field of Knowledge Management. The importance of aspects related to the users and the meaning of corporate culture in changing the ways to act proved to be a really important aspect in the Knowledge Management development as also has been presented in the previous studies. This research also adds new understanding and information to the field of developing Knowledge Management through Social Media that can be seen, for example, in noticing the importance of having a block of people as Intranet content producers, in considering not only the

strengths but also the weaknesses of digital natives and in realizing the necessity for continuous management support and follow-up to the implementation of Social Media solutions to diminish the risk of failing in the implementation.

Research results can be seen valid in the target organization as well. Methods of user centered design were utilized to keep the research focus on the users of the planned Knowledge Management system at all phases of the development. Maintaining the focus on the employees of the target organization and giving them all a possibility to influence the design strongly demonstrated that the gained results suggested are qualified. The planned solutions were performed on the potential users and evaluated by them at all development phases. The solutions were modified by the opinions of the users to make sure that the solutions will work when implemented in the target organization.

Combining Knowledge Management with Quality Management and Social Media utilization is a new theoretical approach presented in this thesis. Also a systematic Knowledge Management development process (Figure 12) was created in this study. This process is based on and very similar to the other plans to develop Knowledge Management and has been chosen because it also contained the aspects of Social Media. The theoretical approach and the development process of this thesis can be put to further evaluation in different environments to define their limitations and development needs. Their evaluation in other organizations could also be very beneficial. Using user-centered methods in developing Knowledge Management instead of traditional Knowledge Management methods affects also the results. Even so, keeping the focus on the user cannot result in inaccurate results. It was also possible to present the planned solutions only to a couple of the potential users of all employees. It is, of course, not feasible to collect all the wishes and opinions of the employees; some feedback however is needed to verify the correctness of the solutions. Evaluating the solutions with 3 to 5 users depending on the solution was chosen and is enough to provide the necessary information about the solutions because, according to Nielsen (1993), as few as only three users will find almost 75 percent of the usability problems.

Despite the limitations, the results are important to the target organization and most of them will be implemented or piloted in the near future. The solutions of this thesis will help the target organization to take its Knowledge Management system to a totally new level of performance, effectiveness and usability. Employee possibilities to influence decision making will rise and the company will gain benefits in terms of more effective working, clearer processes that are supported by appropriate tools, wider knowledge of Social Media and more contented employees.

8.3 Recommendations for future studies

This research has built a theoretical approach to the development of corporate Knowledge Management through Social Media. This approach could be refined and developed further. The approach could be compared to some other Knowledge Management Systems development processes, like, for example, to the hybrid life cycle of Awad and Ghaziri (2004).

In this research the theoretical approach has been used inside one company. It, however, would be interesting to examine its functioning first inside some other companies and then compare the results to each other. The approach could also be tested in the relationship between a couple of partner companies to improve the cooperation. The target organization and its relation to its owner companies would be a suitably challenging environment to develop the framework further.

Besides the theoretical approach the results of this thesis could be utilized in some other field than in a company. Education and training could benefit from the solutions that could be built upon the conclusions of this study. The results could then be integrated, for example, in competence development solutions. The understanding of the importance of aspects related to convincing people could be beneficial in any solutions related to human machine interaction. The importance of understanding the meaning of usability and easiness of use is worthwhile for everybody.

The differences in the use of Social Media and other solutions between digital natives and digital immigrants need to be researched further. Nowadays researchers have been focused on the strengths of the digital natives but also their weaknesses

should be considered as done in this study. Digital natives probably have some weaknesses that are regarded as obvious strengths in the users of today. This can affect the use of planned systems especially when most of the designers are digital immigrants at the moment.

It would be also very interesting to study how the Social Media solutions and their adopting change the corporate culture. Also the reactions of the management to paradigm changes could provide an interesting avenue of research. A possible study field could also be the eagerness and ability of the corporate management to think over the development needs of the company and, for example, to recognize weak signals that the company should utilize in the future. Another interesting viewpoint would be to study the ways to imbed new knowledge in an organization.

8.4 Discussion

Social Media has two aspects – technology and mindsets. Technology points to the wide variety of Web 2.0 applications and tools. Mindsets refer to open communication, shared power to decide, interactivity, collectivity, collaboration and free sharing and using of knowledge that are enabled by the use of Social Media technology. In public, however, the technological aspect has gained far more attention than the mindset. Both aspects are equally important and should be taken into consideration when deciding about Social Media use. It is not enough to simply choose the Social Media tools that answer the needs of the company. It is also important to evaluate how the corporate culture should be developed and how the tools used effect the mindsets inside the company. A company should be actively involved in making changes in the corporate culture and not only notice that the chosen Social Media tools opened the culture and gave the employees power to decide. A follow up is needed to make sure that the appropriate tools are utilized effectively in the company.

The mindsets of corporate managers and continuous management support are especially relevant when dealing with Knowledge Management development. The whole organization needs to be prepared and informed about the changes in managing knowledge. Managers should support the process of building a new

Knowledge Management system by encouraging employees and by supporting them with systematic notifications. The importance of the mindsets of managers in the development of the existing Knowledge Management system and the adopting of new Tools could be a field for further studies.

Social Media utilization demands radical re-thinking of corporate knowledge ownership. Traditionally it has been possible to have knowledge gate keepers in the company that have been able to choose which pieces of information are given to all employees. Social Media use changes corporate knowledge ownership by providing ownership to everybody. All employees are given a possibility to distribute their own knowledge, experiences and opinions. Special emphasis has to be put on defining the role of previous knowledge gate keepers anew. The radical new thing is that there will be considerably less gates to guard. Help might be needed to be able to change previous ways and practices towards more open knowledge sharing. Knowledge gate keepers' fear of losing power or control is a potential risk to the implementation of Social Media solutions and should be taken seriously.

Knowledge Management development is a challenging field. A person or a group in charge of the development should build a picture of the existing management of knowledge, technological tool possibilities, corporate needs and wishes and employee competences. Strong support from the management and a possibility to examine the existing Knowledge Management is needed to build the total picture about corporate actions related to the study field. Also a possibility to present unfinished results and get feedback on them and the possibility to collect information from the real users ensures the correctness of the results.

Social Media tools are considered necessary especially in asynchronous communication and in communication that is happening from different locations. Those types of communication can happen only through some tools and that is why it is obvious that Social Media tools are also utilized in that field. However, Social Media possibilities have got a relevant role in synchronous communication too, and in compensating for some face to face communication. Video conferencing, chat, instant messaging, virtual worlds, web cameras or other tools could offer some new

benefits to the company when utilized in new situations instead of the older tools and practices.

As already presented in the theoretical part of this thesis, there are also challenges when using Social Media tools inside a company. These challenges exist even if the choice of tools and their implementation has been successful. The challenges are related to privacy, the behavior of tools users and the challenges related to the use of time. Employee understanding of privacy might differ from that of the corporate regulation. When knowledge sharing is very easy, it can also move easily outside the company. Behavior of tool user refers to the Intranet use. There is always a risk that Intranet content becomes inappropriate if the discussions are not controlled somehow. A good way to control Intranet content is always to publish the name of the author in the material. Time is a challenge to the company if employees start using the offered tools for something other than working. This can be prevented by monitoring the executed work of each person. Nevertheless, it is also important to remember that controlling the employees should not prevent employee possibilities to be creative and diminish their contentment at work.

One challenge with Social Media is also the employees' use of Social Media tools during free time in the Internet. If work mates are discussing about work using an Intranet tool, how is it possible to be sure that the conversation is not heard or saved for the use of third parties? It is also not always clear that who owns the information a person enters to an Internet tool. Some personally written comments might be wished to be removed easily but the removing of the content might be impossible. That is why employees should understand to be very careful while exchanging information over the Internet and to share work-related content through safe tools offered by the company.

The competences and ways of act between digital natives and digital immigrants differ from each other. Digital immigrants being not so skilled with Internet use, feel more unfamiliar in the Internet. This can be a positive thing for a company when the amount of company information or discussions entered to the Internet stays low. In 20 years most employees are digital natives that have had web pages and applications presenting themselves since they were born. The attitude towards internet is different

from the attitudes of most current employees and this will also affect the amount of corporate information entered to the Internet in the future. Digital immigrants have not yet faced such a huge paradigm change like the Internet. They will be unprepared for such as people in all previous paradigm changes throughout history.

In choosing Social Media tools, a company must remember that it can utilize ready Internet applications like *Facebook* that are somehow restricted to the use of the company or it can acquire applications that are just planned for the use of its operations. Utilizing existing applications seems to be cheaper for the company but applications that are planned for the sole use of the organization offer greater possibilities for the company because they match to the need of the company. Usability matters should be considered when choosing the best possible tool for each corporate action. Usability is a field that has not previously been covered in planning Knowledge Management or at least it has not been a key issue in the development. An application that is more expensive but offers a user interface that is easy to use, learn and which works as planned can be a more beneficial solution for a company than a cheaper solution.

Social Media offers great possibilities for organizations that utilize it in a planned and systematic way by considering the benefits and challenges carefully. Nowadays an organization improves its possibilities to be successful also in the future by staying within the technological development and by offering the best possible tools for its employees. Developed possibilities for knowledge sharing, communication and the emergence of innovations ensure that the company stays effective and creative. Also employee happiness rises with better possibilities to influence corporate actions and because of more effective processes. This affects their eagerness to stay in the company and affects positively the business success of the company.

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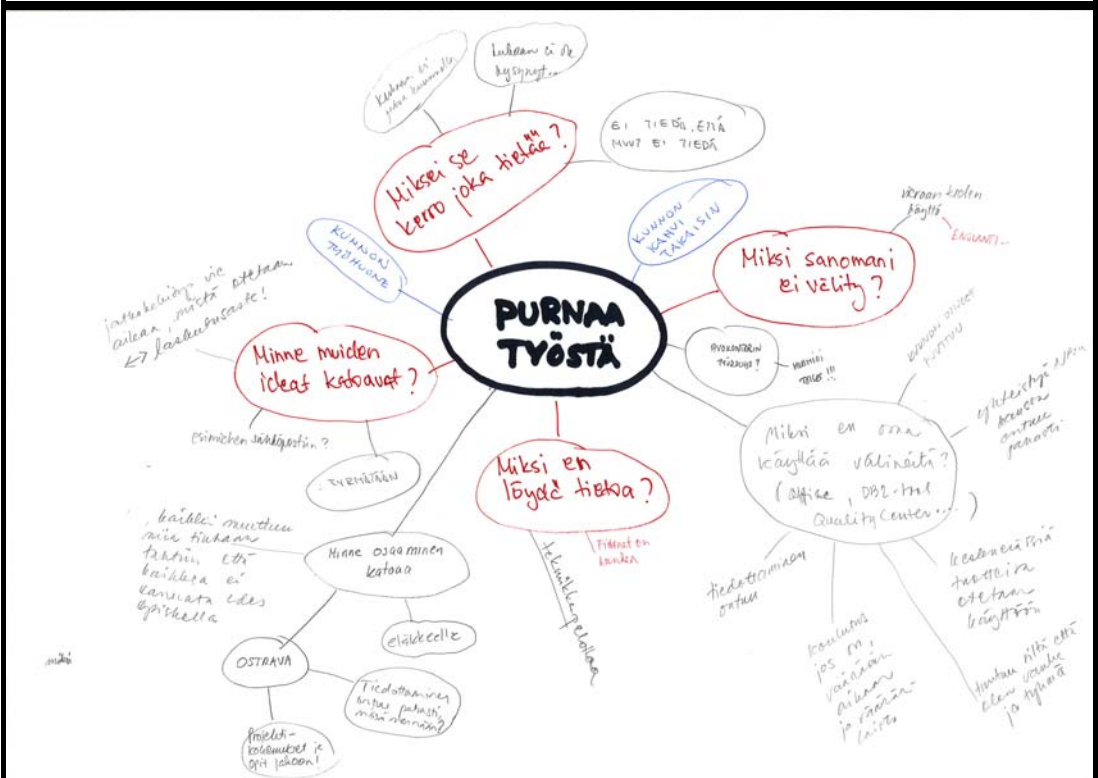
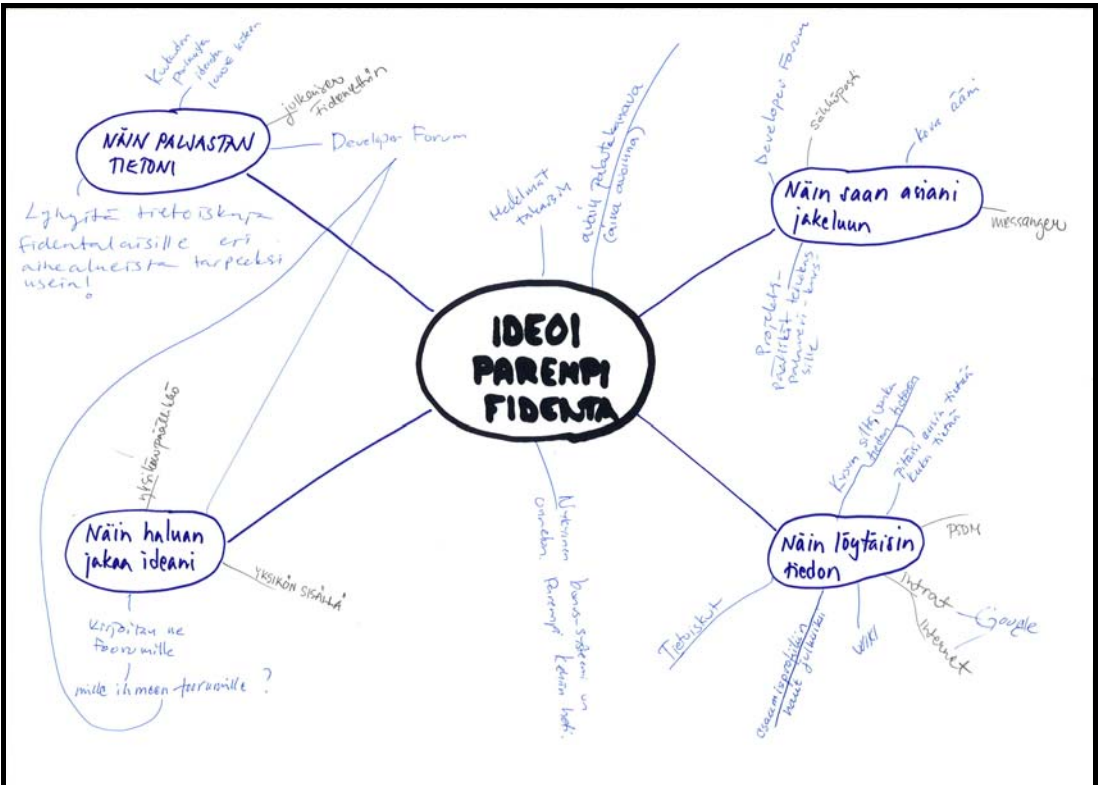
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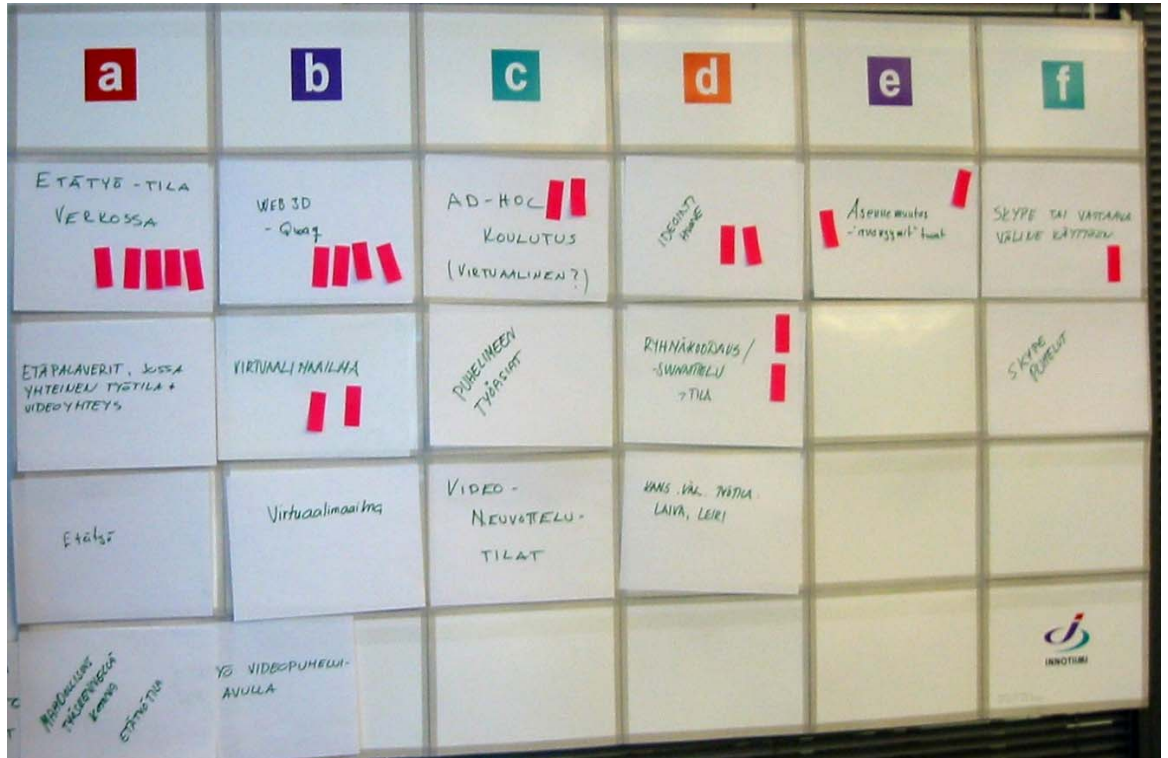
Appendix A.

Appendix A contains examples about probes “Generate ideas about better Fidenta” and “Grumble about work”.



Appendix B.

Appendix B includes a picture of a brainstorming session about Social Media use in the target organization Fidenta.



Appendix C.

Appendix C contains a questionnaire of Social Media solutions in the target organization Fidenta.

Social Media Innovation Kysely

Kysymyksissä 1 ja 2 kysytään vastaajan ikää ja työnimikettä. Tietoja käytetään taustatietona tulosten arvioimiseen, eikä yksittäistä vastaajaa erotella vastausten perusteella.

1) Mikä on ikäsi?

-30

2) Mikä on työnimikkeesi?

Assistant

Projektin tutkimuksissa selvisi, että Fidentan projekteista tulisi olla enemmän tietoa helposti löydettävissä.

3) Mitä tietoa haluaisit Fidentan projekteista kootusti yhdessä paikassa kaikille avoimesti?

<input type="checkbox"/> Projektin nimi	<input type="checkbox"/> Lyhyt kuvaus	<input type="checkbox"/> Aikataulu	<input type="checkbox"/> Projektiryhmä	<input type="checkbox"/> Projektiryhmän tehtävät
<input type="checkbox"/> Ohjausryhmä	<input type="checkbox"/> Projektin tilanne	<input type="checkbox"/> Projektissa käytettävät tekniikat	<input type="checkbox"/> Projektissa käytettävät prosessit	<input type="checkbox"/> Projektin saamat palautteet
<input type="checkbox"/> Projektin dokumentit	<input type="checkbox"/> Muuta, mitä?			

Tutkimuksista ilmeni, että Fidentan henkilöistä ja heidän osaamisista tulisi löytää enemmän tietoa.

4) Mitä tietoa haluaisit nähdä Fidentalaisista nimen ja yhteystietojen lisäksi?

<input type="checkbox"/> Henkilön projektit	<input type="checkbox"/> Henkilön tekninen osaaminen	<input type="checkbox"/> Henkilön prosessiosaaminen	<input type="checkbox"/> Vastuualueet	<input type="checkbox"/> Työtehtävät
<input type="checkbox"/> Kirjoittamat dokumentit	<input type="checkbox"/> Kirjoittamat keskustelut	<input type="checkbox"/> Muuta, mitä?		

5) Onko jotain työhön liittyvää tietoa mitä et haluaisi jakaa itsestäsi avoimesti työpaikalla?

Tiedon jakaminen on oleellinen osa Fidentan toimintaa. Tiedon kulkeutuminen sitä tarvitseville osapuolille onkin olennainen osa toimintaamme mahdollistaen työskentelyn.

6) Mikä kannustaisi sinua jakamaan tietoa muille ja mikä olisi paras tapa jakaa tietoasi kirjallisesti?

Hiljaisen tiedon välittäminen on haaste Fidentassa. Yhtenä vaihtoehtona olisi käyttää työparia, eli kaksi ihmistä tekisivät töitä yhdessä. Tämä mahdollistaisi toiselta oppimisen, sekä hajauttaisi osaamista useammalle henkilölle.

7) Koetko että työpareissa työskentely sopisi sinulle

- ☐ Kyllä
☐ Ei

Wiki- tyyppinen tietojen jakaminen on yleistynyt viime aikoina. Wikin avulla kuka tahansa voi käydä päivättämässä johonkin aihealueeseen liittyviä tietoja tai lisätä uuden aihealueen. Oikeuksia voidaan myös rajata suppeammalle joukolle.

8) Jos Fidentin joku aihealue olisi Wiki -pohjainen ja kaikilla olisi oikeudet tämän alueen työstämiseen, niin mikä tämän alueen pitäisi olla?

9) Tarvitsisitko koulutusta wiki -tyyppisen ratkaisun käyttämiseen?

- ☐ Osaan käyttää wikiä jo nyt
☐ Haluaisin opetella käytön itse ohjeiden pohjalta
☐ Haluaisin tietoisuuden asian tiimoilta ohjeiden lisäksi
☐ Haluaisin koulutuksen, ja opastusta wikin käytöstä

Ideoiden välittäminen Fidentan sisällä ei aina suju ongelmattomasti. Hyvätkin ideat saattavat jäädä lojumaan eikä niille tehdä loppujen lopuksi mitään.

10) Miten haluat välittää omat ideasi Fidentassa? Mikä ratkaisu ei mielestäsi varmasti toimi?

Pikaviestimen (esim. messenger) käyttö on koettu näppäräksi tavaksi välittää tietoa työpäivän aikana mutta, myös kriittisiä kommentteja pikaviestimen suhteen on annettu.

11) Mikä saisi sinut käyttämään pikaviestintä Fidentassa?

- | | | | | |
|---|---|---|--|---------------------------------------|
| <input type="checkbox"/> Käytän
pikaviestintä jo nyt | <input type="checkbox"/> Tietoisku | <input type="checkbox"/> Koulutus | <input type="checkbox"/> Käytännön
opastaminen omalla
työpisteellä | <input type="checkbox"/> Ei
mikään |
| <input type="checkbox"/> Uudempi versio
Windows
messengeristä | <input type="checkbox"/> Joku toinen pikaviestin, mikä?
<input type="text"/> | <input type="checkbox"/> Muu, mikä?
<input type="text"/> | | |

Fidenetin etusivulle nostetaan päivittäin uutisotsikoita Tietoenatorista.

12) Mitä tietoja haluaisit sinulle välitettävän Nordeasta?

Massasähköpostit tukkivat helposti postilaatikon, ja tärkeätkin viestit saattavat hukkua muun massan joukkoon.

13) Voisiko sähköpostien määrää rajata jollakin tavalla? Onko jotain tietoa jonka voisi välittää muullakin tavalla ja mikä olisi tämä tapa?

Mediassa puhutaan yhtenäen uusista tekniikoista ja toimintatavoista. Web3d ja virtuaalimaailmat, avoimen lähdekoodin hyödyntäminen, avoin innovaatio kilpailijoiden kanssa jne saattavat kuulostaa jo hämärästi tutuilta.

14) Mitä tekniikoita tai toimintatapoja Fidentan tulisi hyödyntää?

Appendix D.

Appendix D includes results from the first phase of Fidenta's Knowledge Management development project – *the demand to develop Knowledge Management*.

Demand related to knowledge distribution	Description of the demand	Criticality (1=low – 3=high)	Solution type: A new solution, Modification of an existing tool, New operational model
Project's knowledge need to be utilized in other projects	Projects should have a common knowledge database for lessons learned, encountered challenges, solutions made. There should be a possibility to use another project's knowledge. There should be a way to utilize the knowledge systematically.	3	A new solution
Sharing of experiences between employees should be possible	Sharing of experiences should be possible in context with more official guidelines. Encouraging attitude to share experiences is needed to activate people	3	A new solution
Possibility to share formal information between employees	Publishing guidelines, technical information, etc. should be easy and fast. All employees should have a possibility to publish their information. There is a need for a systematic place where the information is published. Links are needed if the information related to same subject is situated in many places.	3	A new solution
Fidenta's Intranet needs to be accessed outside the company as well	Employees should have a possibility to use Internet's information and documents also outside the company	2	A new solution
Employees need more information about others competences	There should be more information about: who is in charge about specific matters, who gives the permissions, who has specific skills, etc. Laws of person's protection need to be taken into account	2	A new solution
Employees need more information about possible tools related to their work	Information about possible tools and their usage need to be found easily	2	A new solution
Employees need information about projects in the com-	There should be more Information about existing and starting projects. The information needs to be shared	2	A new solution

pany	over unit and group boundaries.		
The information in company's Intranet need to be up to date and new information should be highlighted somehow	The information related to own work should be found easily. Updating of specific work related document or piece of information should be noticed. Important announcement should be delivered personally.	2	Modification of an existing tool
Reviews (code, test, risk, project) information should be delivered to all people that should utilize it	There is a need for a review database <ul style="list-style-type: none"> • Possibility to store, search information and compare it • Way to utilize the information systematically A new operational model for utilizing this existing information could solve the demand	2	New operational model
Finding of information should be easy and systematic	Division of information to many different places is a problem. If all these information bases are relevant, they should be interlinked. Search from the Intranet should work better	2	New operational model
Information should be understandable	There should be clear guidelines, what is the used language in the Intranet/ Extranet. Technical abbreviations should be explained	2	New operational model
Messages should be allocated to right persons	Mass-emails should be reduced and unnecessary mails could be compensated for some way	1	A new solution

Demand related to communication	Description of the demand	Criticality (1=low – 3=high)	Solution type: A new solution, Modification of an existing tool, New operational model
Classification of tacit knowledge	How to find business relevant tacit knowledge that should be converted to explicit and document it for the use of all employees?	3	A new solution
Supplying tacit knowledge should be developed	How to maintain relevant knowledge of the retiring employees in the company? How to find the person, who knows the needed information? How to supply relevant tacit knowledge over organizational boundaries?	2	A new solution
There is need for discussion forums and virtual workplaces	Customer managers, managers and other groups of employees need place to share thoughts and ask questions. Also customers should be able to join these areas.	2	A new solution
All employees should use instant	Instant messenger should be more reliable. Operation models are needed	1	Modification of an existing tool

messenger	to activate the use. Everybody should use instant messenger.		
Blog use	Connection between e.g. all employees and management.	1	A new solution and operational model

Demand related to developing ideas	Description of the demand	Criticality (1=low – 3=high)	Solution type: A new solution, Modification of an existing tool, New operational model
Developing of ideas should be improved	Idea development possibility that combines all employees is needed. It should be open and interactive. Time for generating ideas and operational models to activate idea generation are needed. Innovation strategy and change of attitude are also necessary.	2	A new solution
Sales possibilities and lost cases should be collected and analyzed	Sales possibilities should be shared with the whole company. If the case did not sell, the reasons should be collected and action made (competence development, resource planning, etc.).	2	A new solution
There should be a possibility to give feedback	Giving feedback should be anonymous and commenting should be easy.	2	A new solution

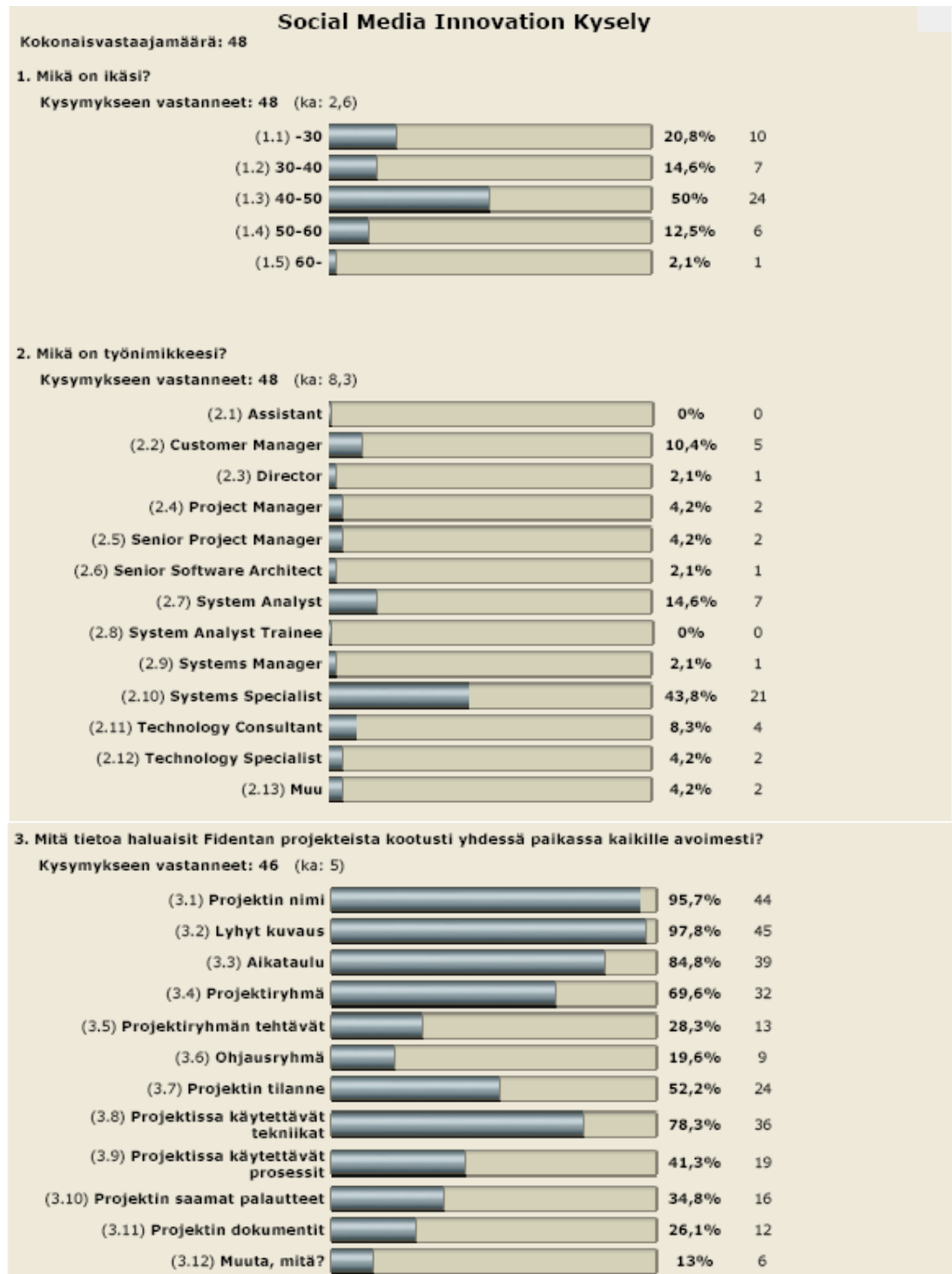
Problems related to existing tools	Description of the demand	Criticality (1=low – 3=high)	Solution type: A new solution, Modification of an existing tool, New operational model
Appointment should always be made through Outlook	Outlook calendars should be up to date and open to all employees.	2	New operational model
Instant messenger is not working properly and does not support changing of documents between more than two people	Instant messenger should work properly. Operation models are needed to activate the use of it.	1	Modification of an existing tool
Developer forum is not used	There should be links to combine information related to the same topic in Intranet and in the forum. It should be clear, which type of information is found from the forum. The name of the forum should not prevent others than	1	New operational model

	developers of going to it. All employees should be registered in the forum.		
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Demand related to customer and partners	Description of the demand	Criticality (1=low – 3=high)	Solution type: A new solution, Modification of an existing tool, New operational model
Communication channel is needed between Fidenta and customer	All employees should have a possibility to communicate with customer. Communication with customer's business unit should be developed. Discussion forums and virtual workplaces would improve communication and working with same documents. Discussing about work related questions should be faster and more interactive.	2	A new solution
Extranet is needed	Customer should have an access to Fidenta's network (Extranet, work places, shared documents, organization and employee information)	2	A new solution
Communication and sharing of information and documents between partners should be developed	Email and instant messenger are not enough for effective communication Shared workplaces, common wiki or desktop sharing possibilities should be considered	2	A new solution
Fidenta and customer should have a common idea development area	Ideas should be collected and improved from both sides because work is done together. Employees from customer's side and Fidenta should interact easily.	1	A new solution
Employees need information from customer, partners	Information about organization, competences, responsibilities, permission and experts is needed.	1	A new solution
Customer feedback should be collected in a more developed way	Feedback should be provided to all people that are related to it. Ways to collect feedback should be developed.	1	Modification of an existing tool

Appendix E.

Appendix E contains results of the questionnaire that is presented in Appendix C.



Kysymys [3.12] (Mitä tietoa haluaisit Fidentan projekteista kootusti yhdessä paikassa kaikille avoimesti?. Muuta, mitä?)

1. Linkki työtilaan
2. Projektin kokoluokka euroissa
3. resurssitarve
4. linkki projektidokumentaatioon
5. kootut kokemukset, mitä hyvää/huonoa
6. PM tai Yhteyshenkilö
7. Projektin avoimet asiat, jatkosuunnitelmat
8. resurssitarpeet

4. Mitä tietoja haluaisit nähdä Fidentalaisista nimen ja yhteystietojen lisäksi?

Kysymykseen vastanneet: 44 (ka: 3,4)



Kysymys [4.8] (Mitä tietoja haluaisit nähdä Fidentalaisista nimen ja yhteystietojen lisäksi?. Muuta, mitä?)

1. Liiketoimintaosaaminen, oma kuvaus kiinnostuksenkohteista
2. henkilön itsensä kirjoittama asia, josta on halukas neuvomaan muita, myös kuva
3. Teknologiasaaminen ja henkilöt, joilla ko. osaamista on
4. Kokemus, toiveet siitä mitä henkilö _haluaisi_ tehdä

5. Onko jotain työhön liittyvää tietoa mitä et haluaisi jakaa itsestäsi avoimesti työpaikalla?

1. Ei ole, olisi tosi mukavaa jos voisin poistaa omista tiedoistani esim. keskustelun, jota en halua mainostaa
2. Urasuunnitelmat
3. Asiakaspalautteet
4. Palkkaus, loman/sairasloman syy, liukumien käyttö, tehdyt tuntijakaumat tämä projekti/tuo projekti, laskutusaste, henkilökohtaiset palautteet (sekä positiiviset että negatiiviset)
5. Minä voisin kertoa vaikka palkanikin
6. Kyllä varmaan
7. ei ole
8. palautteet
9. Laskutusprosentit.
10. Ei
11. ei ole
12. Kyllä
13. Ei, kaikki näkyville vaan
14. ei

6. Mikä kannustaisi sinua jakamaan tietoa muille ja mikä olisi paras tapa jakaa tietoasi kirjallisesti?

1. IBM- ja Tandemtukitilmienv sivuilla voisi olla osio, johon voisi helposti lisätä teknisiä vinkkejä. Nythän siellä on jo joitain vinkkejä, mutta kynnyksensä laittaa sinne jotakin taitaa olla aika iso (suurin osa vinkeistä tosi vanhoja...).
2. Aikaa tiedon jakamiseen, siihen kannustaminen huomiollalla jollain tavalla. Wiki, blog, avoimuus, vapaus ja helppous kirjoittaa tietoa on tärkeää.
3. Myönteinen asenne ja kaikille yhteiset pelisäännöt. Ei tule sallia erivapauksia kenellekään eli esim. dokumentointia tai muita byrokraattisiksi koettuja töitä ei voi jättää hoitamatta sillä syylä että ei huvita.
4. Olen aina pyrkinyt jakamaan kaiken töihin liittyvän tiedon sitä tarvitseville, jottei minusta tulisi "korvaamatonta". Korvaamaton kun on arvaamaton. Wiki-ratkaisu on loistava ajatus.
5. Kokeillaan jo nyt tuottaa SharePointia, se tuntuu olevan paras tähänastisista välineistä (on jo kokeiltu tiimisivuja, Fidenettiä, blogia ja developers forumia...)
6. Joku pieni nimellinen palkinto vaikkapa "viikon parhaasta kirjoituksesta"
7. Ei tarvitsisi ajatella laskutusastetta, vaan tiedon jaolle olisi oma piikkinsä.kysele-vastaa tilaisuuksia
8. Se kannustaisi että tieto olisi paikassa josta ihmiset osaisivat sitä etsiä, tavalla ei ole niin väliä.
9. Omasta kokemuksesta voin sanoa, että tiedon jakoon motivoi se, kun itse on hyötynyt merkittävästi kollegojen avoimesta tiedon jaosta. Olen ollut siinä onnellisessa asemassa, että tällaisten henkilöiden kanssa olen saanut työskennellä.
10. Joku HELPPO tapa, mikä ei vaatisi monisivuisten ohjeiden lukemista (SDP) tai jonkun hassun järjestelmän pitkää opettelua (Travel).
11. kysymykset ja vastaukset -foorumi / Teamer -ratkaisu: Fident site, johon alettaisiin yhdessä koota ongelmaratkaisuja, ohjeita, vinkkejä (kaikki voivat päivittää)
12. Tieto siitä, että joku tarvitsee tietoani. Tiedon jako intrassa on paras tapa.

13. Yhteinen helpokäyttöinen paikka/menetelmä tiedon tallettamiseen ja ylläpitoon.
14. Intra / lyhyet hakupolut (vinkkilinkki hyvä). Täällä on "valitettavasti" paljon pitkään olleita, jotka pitävät asioita itsestään selvinä ja jos jotain kysyy, vastaus on että onhan se tieto jossain, "ole oma-aloitteinen", "etsi se (tieto) intrasta". Lisäys kysymykseen: ei auta jos työpari on melkein yhtä uusi kuin sinäkin, työparin pitäisi olla "konkari".
15. Jaan tietoa nyt jo aika avoimesti. Tapoja voi tuki kehitellä aina lisää ja nykyisiä parempia. Jakaminen toimii paremmin, kun se kysyy, jolla on tarve. Passiivinen jakaminen ei helposti tavoita tarvitsijaa.
16. Yritän jo nyt kirjoittaa kiinnostavista aiheista foorumille.
17. Se, että siihen varattaisiin aikaa. Nykyään asiakkaalta veloitetaan joka kk sovelluksesta maksu, jolla voitaisiin kouluttaa uusia huoltohenkilöitä, mutta ei kouluteta.
18. Peruslähtökohta on, että kaikilla on tiedon jakamisen vastuu: suullisesti ja kirjallisesti
19. 1. Positiivinen palaute 2. Sähköposti, wiki
20. Tieto siitä että muut käyttävät jaettua tietoa. Jos tuntuu siltä että kukaan ei dokkareita kuitenkaan lue, mitä hyötyä jakamisesta on?
21. Mielelläni jaan tietoa muille, mutta aika ei tahdo riittää. Tiedonajon pitäisi olla mahdollisimman epämuodollista, jotta kynnys tiedonjakoon olisi matala.
22. Työkuorma helpottuu kun osaajia on enemmän. Työkalujen (sekä tiedon luomiseen että lukemiseen) pitää olla niin helpokäyttöisiä kuin mahdollista
23. Tieto siitä että tieto tulee tarpeeseen. Turhaan ei viitsi mitään kirjoitella.

7. Koetko että työpareissa työskentely sopisi sinulle

Kysymykseen vastanneet: 47 (ka: 1,2)

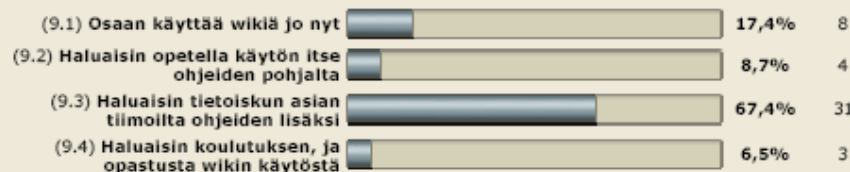


8. Jos Fidenetin joku aihealue olisi Wiki -pohjainen ja kaikilla olisi oikeudet tämän alueen työstämiseen, niin mikä tämän alueen pitäisi olla?

- 1.
2. Keskuslaitealustat.
3. Järjestelmäkehitys, tekniset ohjeet, työ ohjeet, koulutusosiossa voisi olla paikka koulutusten kommentointiin, uutisia olisi mukava kirjoittaa vaikka moderaattorin hyväksynnän kautta. Helppous on tärkeää.
4. Työntekoon liittyviä aiheita ei saisi rajata (paitsi ehkä HR yms. management aiheet) koska yhteisö hoitaa sensuurin&kontrolliin.
5. Sen perusteella miten vähän ihmisillä on aktiivisuutta developer foorumille, epäilen vahvasti että voisiko moinen wiki menestyä.
6. NTP
7. Kaikki mahdollinen työhön liittyvä, en keksi yhtään aluetta mitä pitäisi rajata pois.
8. Tarvitseeko aluetta rajata jotenkin? Wikissä pitäisi olla toimiva sanahaku ja vaikka joku aihealueetelo. Esim ilmoittautumiset tapahtumiin ja koulutuspäiviin. Olisi mukava nähdä ketkä muut ovat osallistumassa. Sisällön tuottamiseen pitäisi olla jotenkin toimivaa kannustetta..
9. Kaikenlainen työhön liittyvä ohjeistus. Jokaisella Wiki alueella pitää olla vastuuhenkilö (moderator)joka 'tarkistaa' säännöllisesti alueen sisällön. Pitäisikö henkilön joka lisää tai muuten työstää sisältöä ilmoittaa moderaattorille muutoksista?
10. -
11. mikä tahansa teknilöihin, menetelmiin, prosesseihin, sovelluksiin liittyvä aihe, josta kulloinkin puhe
12. En osaa sanoa.
13. Vinkkilinkki, järjestelmäkehitys
14. Tapa tehdä töitä. Eli esim. jossain kerrottu, onko olemassa valmiita pohjia, joita voit hyödyntää. Standardit.
15. Ohjeistus
16. Järjestelmäkehitys -alueen ohjeistus
17. Jokapäiväiseen työhön liittyvä, esim. Tandem-ohjeet, johon jokainen voisi lisätä ohjeita, jotka itse on hyviksi havainnut
18. Suuren sovelluksen ylläpito- ym. ohjeistus voisi olla wiki-pohjainen. Asia olisi suunniteltava hyvin jotta se olisi parempi kuin nykyiset hajanaiset ohjeistusdokumentit.
19. Sovellusesittelyt (mitä voi tehdä, miten asennetaan), prosessiesittelyt (miten prosessi toimii ja MITEN sitä käytetään, check listit) Myös kunkin Fidentassa tehdyn tai ylläpidettävän sovelluksen voisi esitellä wikissä.
20. Mitä jättää ulkopuolelle ?
21. Työmahdollisuudet
22. Fidentassa käytettävät työkaluohjelmat, ajurit ja niihin liittyvät pikaohjeet ja tyyppisimmät ongelmat ratkaisuehdotuksineen
23. En keksi

9. Tarvitsisitko koulutusta wiki -tyyppisen ratkaisun käyttämiseen?

Kysymykseen vastanneet: 46 (ka: 2,6)



10. Miten haluat välittää omat ideasi Fidentassa? Mikä ratkaisu ei mielestäsi varmasti toimi?

- Ideapankki
- Sähköpostin tai Fidenetin kautta.
- Välittäisin ideat mielelläni kootuissa ideariihä tapahtumissa, joita pidettäisiin oman ryhmän kanssa kerran puolessa vuodessa ja parhaat ideat esiteltäisiin Fidentan infoissa. Ideoista pitäisi palkita jollain tavalla ja niitä pitäisi hyödyntää jatkuvasti. Myös palaute omista ideoista on tärkeää. Toisaalta jokin paikka, johon voisin välittää ideani ja kommentoida muiden ideoita voisi olla hyvä.
- Järjestelmäkehityksen osalta yhteisissä työpalaverissa on otollista kehittää työskentelytapoja ja kommentoida uusia ajatuksia kasvokkain interaktiivisesti. Pelkkä sähköpostin lähettäminen ei toimi.
- Uusi idea ei koskaan toimi, jos ihmisille jätetään vapaus käyttää vanhaa tapaa/työkalua/prosessia.
- Kehityskeskustelun kautta. En ole huomannut että oikeasti HYVÄ idea olisi koskaan jäänyt "lojumaan".
- Ideoista täytyy jäädä joku kirjallinen jälki, muuten ne hukkuvat totaalisesti.
- Parhaiten asiat yleensä omaksutaan jos joku jo käyttää jotain hyvää ja kehuu sitä kavereilleen sekä samalla osaa antaa pikakoulutuksen ja tarvittaessa asennusohjeet.
- En usko omiin ideoihini ja olen liian epävarma tuodakseni niitä esille. Minusta tuntuu että minulla ei ole ideoita.
- Ainakin jokaisen idean elinkaaren status pitäisi infota idean antajalle. Vaikka idea menisi välittömästi roskakoriin.
- Pitäisi olla organisaatiosta riippumaton tapa
- Kerron ideani sellaiselle henkilölle jonka uskon vievän sen eteenpäin. Myös ideoiden välittäminen jonkinlaisen sovelluksen avulla voisi toimia. En osaa sanoa, että mikä ratkaisu ei varmasti toimi.
- Yhteisesti tiedoksi menevät ideat forum-, Share Point/Groove. "Kohdennettu" ideavälitys toimii hyvin sähköpostilla ja suusanallisesti edelleen. Tietojen ja dokumenttien hautaaminen palvelimien hakemistorakenteen syvövereihin ei toimi.
- Nykyinen ei toimi (koska en edes tiedä onko sellaista).
- Elävä keskustelufoorumi toimii, esimerkiksi "siviilipuolen" harrastefoorumit. Ja foorumi on elävä, jos ihmiset ovat aidosti kiinnostuneita siitä, mistä siellä keskustellaan. Meidän tapauksessa siis työstä – järjestelmäkehityksestä. Erilaiset postilaatikat (tuki-, idea-, jne) aika usein jostain syystä epäonnistuvat.
- Ei ainakaan esimiehen kautta välitettynä ideointi toimi. Liian kiireisiä. Jokin sopiva kanava voisi olla hyvä, mieluiten sähköinen.
- Ehdotuslaatikko, siten että ehdotukset voisi laittaa anonymisti, mutta jos ne todetaan hyväksi, niistä saisi kuitenkin jonkin palkinnon
- Pitäisi olla joku taho, joka ottaa idean jatkotyöstön hommakseen.
- Tuskinpa se ideoiden välittäminen on hankalaa, vaan se etteivät ihmiset ole samaa mieltä ideoiden hyvydestä, tai innostu niiden toteuttamisesta.
- Sähköpostilaatikko voisi toimia, ehkä semmoinen jo onkin... Olemassaolevien menetelmien mainostus ei koskaan ole pahasta
- Nimetty henkilö/ryhmä jonka tehtävä on ottaa kantaa jokaiseen ideaan josain aikataulussa ja julkinen idean kohtalon julkaisu.
- Anonyymi sähköpostilaatikko ei toimi

11. Mikä saisi sinut käyttämään pikaviestintä Fidentassa?

Kysymykseen vastanneet: 45 (ka: 2,5)



Kysymys [11.7] (Mikä saisi sinut käyttämään pikaviestintä Fidentassa?. Joku toinen pikaviestin, mikä?)

1.

Kysymys [11.8] (Mikä saisi sinut käyttämään pikaviestintä Fidentassa?. Muu, mikä?)

- Sähköposti on riittävä. Messenger on jopa puhelinta parempi katkaisemaan keskittymistä ja työryhtiä!!!
- Järkevä käyttötarkoitus
- Asiasta sopiminen työporukan kanssa
- Mikäli kaikki käyttävät ja korvaa sähköpostin

12. Mitä tietoja haluaisit sinulle välitettävän Nordeasta?

1. Perustiedot
2. Nordea IT:n uutiset koskettavat usein myös Fidentaa.
3. Niitä tietoja, jotka vaikuttavat Fidentan tilanteeseen.
4. Ajankohtaiset asiat, kuka on vastuussa mistäkin, pieniä tietoiskuja eri osastoista, joiden kanssa tehdään työtä, IT alueen asiat
5. Tietoa siitä, mihin suuntaan milläkin järjestelmäalueella ollaan menossa ja ollaanko budjettia supistamassa tms. Tämä auttaisi esim. omann koulutuksen suunnittelussa.
6. Organisaatiouutiset, tuotantohäiriöt, menetelmäkehitystiedotteet.
7. Nordean uusista tuotteista, organisaatiomuutoksista
8. Nykyinen menettely on aika hyvä, joskus olisin kaivannut jotain enemmän mutta en nyt löydä mitään esimerkkiä.
9. Kaikkia uutisia IT:stä, ehkä oppisin joskus heidän organisaatorakennettaan tai edes jotakin sieltä. Liiketoiminnasta ja IT:stä uudet nimitykset, uudet projektit, tapahtumat, koulutukset (IT Confi!).
10. Samat jotka näkyvät Nordea IT:n etusivulla
11. Resurssitarpeet Projektien esittelyt, tilanteet Organisaatio Yhteyshenkilöt Tarjoilla olevat koulutukset
12. Uutisia sinulle -sivun uutisia
13. mitä tahansa mikä sivuaa minun tai jonkun muun fidentalaisen työtehtäviä/vastuualueita tai henkilökuntaetuja
14. Sellaisia jotka koskevat työtäni ja myös sellaisia jotka koskevat koko Nordeaa.
15. Kehitysnäkymiä, tilannetiedotuksia, IT:n uutisia.
16. Kuka on minkäkin sovelluksen vastuuhenkilö.
17. Esim. tietoja muutoksista Nordean IT:n prosesseihin (esim. SDP), koska ne koskevat myös meitä.
18. Kaikki Fidentaa koskeva, yleensä Nordean järjestelmiä ja niihin liittyviä päätöksiä koskeva informaatio
19. Tiedot tapahtumista, joihin mekin voimme osallistua
20. Perusuutiset ehkä, mutta toisaalta oma aktiivisuuskkin kunniaan! Itsekin on mentävä tiedon lähteille
21. Samanlaisia uutisotsikoita kuin Tietoenatorista, mutta Suomen kielellä. Vieraskieliset uutiset jäävät lukematta.
22. Meillähän on pääsy Nordean Intraan, tieto löytyy suoraan sieltä.
23. Ylipäätään mikä tahansa tieto olisi mukava, nyt en tiedä "mitään". IT:n uutiset olisi hyvä nostaa, samoin kuin yleiset uutiset mitä Nordeassa noin kaiken kaikkiaan tapahtuu. Jokin tiedonmurunenkin on parempi kuin tämän hetken surkea tilanne.
24. mm. organisaatiouudistukset
25. Projektit, organisaatio, koulutusmahdollisuudet
26. Meihin vaikuttavat
27. mitä uutta tapahtuu IT:ssä, Nordean järjestämät koulutukset, NTP:n tilanne

13. Voisiko sähköpostien määrää rajata jollakin tavalla? Onko jotain tietoa jonka voisi välittää muuliakin tavalla ja mikä olisi tämä tapa?

1. En koe postin määrää nykyisellään ongelmaksi. En myöskään ole huomannut, että muut siitä valittaisivat.
2. En osaa sanoa.
3. WIKI, rss-syöte, opetetaan ihmiset käyttämään sähköpostia oikein
4. Massapostit voi korvata Fidenet-uutisilla mutta muuten sähköpostia on turha kontrolloida.
5. En koe tätä ongelmaksi. Se ken kokee (ongelmaksi) lienee haalinut itselleen liikaa vastuuta eikä sitten enää kykene niistä selviytymään? Tulevia sähköposteja voi kyllä ohjata eri kansioihin esim. aiheen tai lähettäjän perusteella, itse olen käyttänyt tätä apuna. Tietysti kun ajattelee että esimerkiksi työohjeita lähetetään vieläkin suurimmaksi osaksi s-postin kautta, niin oikea tapa olisi kirjata ohje SharePointiin joska siellä se olisi pysyvästi tarjolla ja helposti löydettävissä.
6. Sairasloma ja poissaolo-ilmoitukset voisi koota yhteen päivitettävään taulukkoon tms. Näillä tiedoilla harvemmin on suurempaa merkitystä ja jos on tarve tavoittaa henkilö, voisi sen sitten tarkistaa jostain.
7. En ole kokenut ongelmaksi.
8. en ole massasähköpostien jakelulistaqlla joten en koe tätä häiriöksi
9. Minulla ei ole ongelmia liiallisen sähköpostin kanssa.
10. Messenger on helppo tapa pitää lyhyet epäviralliset keskustelut poissa postista. Olisi hauska käyttää esim lomalistoiissa jotain whiteboard-taulua, joka olisi toimistossa näkyvillä. Voisi lisätä myös toimiston viihtyvyyttä? Nordic Placen tai SharePointin käytöllä voi hyvin välttää suuria posteja liitetiedostoineen.
11. Lyhyet palaverit
12. Teamer
13. Aina ei tarvitse lähettää viestiä vaan voi mennä henkilön luokse keskustelemaan jos se on mahdollista.
14. Massasähköpostit voisi ainakin osittain korvata RSS-feedillä ja jopa blogeilla.
15. Sähköpostien määrää voi rajata jo sillä, että lähettäjä miettiin hetken, ketkä lähetettävää tietoa todella tarvitsevat. Varsinkin massajakeluun vastaajan pitäisi miettiä vastaanottajia!
16. Käytetään eri viestimiä oikein: chattaillyt meseen, yleisesti kiinnostava keskustelu foorumille, pysyvä ohjeistus intraan/wikiin, loput sähköpostiin.
17. nopeat "heitot" Messengerillä
18. Ajantasainen tieto aihealueittain intrassa saatavilla. Lisäksi vastuu-/yhteyshenkilö ja keskustelupaista sekä FAQ.
19. Sähköposti on vain henkilökohtaiseen viestin lähettämiseen. Niiden pitäisi olla lyhyitä ja nasevia. Muistutusta vaan sähköpostin käytön hyvistä säännöistä. Se voisi olla riittävä.
20. Sähköpostien automaattista lähetystä tulisi tarkastella kriittisemmin. Varmasti voi rajata, mutta se vaatii asiaan satsausta.
21. Ei syytä rajata
22. Ilmoitus sähköpostiin, kun jonnekin yleiselle ilmoituslustalle tulee itseä koskevia uutisia, mutta vain kerran, jos lukemattomia viestejä kerkeää tulemaan useampia
- 23.
24. Palaverit
25. Messenger toimii. Siitä ei vaan jää mitään jälkiä joten usein tulee silti käytettyä sähköpostia
26. Voisiko "Flag for follow up" käyttöä lisätä tai ottaa suositus käytännöksi kertomaan että viestiin odotetaan vastausta eikä se ole vain tiedoksi
27. tiheästi muuttuva status- ja tilannetietous rss-feedinä

14. Mitä tekniikoita tai toimintatapoja Fidentan tulisi hyödyntää?

1. Sisäisten keskustelufoorumien (kuten developer forum) käyttöä tulisi mainostaa jatkuvasti. Nämä ovat todella tehokas tapa jakaa tiedonjyväsä kaikille.
2. En osaa sanoa.
3. Avoimen lähdekoodin hyödyntäminen olisi todella hyvä juttu. Asiakkaan kanssa pitäisi pystyä kommunikoimaan helpommin. Virtuaalimaailmaa voisi kokeilla joskus palaverien pitämiseen.
4. Kaikenlaista "ketteryyttä", koska asiakkaan organisaation on totaalisesti kömpelö.
5. Niitä jotka Nordea / TE on päättänyt. En kyllä juoksisi jokaisen uuden innovaation perässä tuikka putkella...
6. Unohtaa kaikki turhanpäiväinen web 2.0 hömpötys. Open source ei ole mikään itsesiarvo, eikä se että softa on ilmainen tarkoita että se olisi kokonaiskustannuksiltaan halvempi. Järkeä mukana ja käytetään tilanteeseen parhaiten sopivia ratkaisuja.
7. Jos nyt edes Netmeetingiä alettaisiin käyttää vähän laajemmalti ...
8. Mielestäni aidot innovaatiot tulevat, jos tarpeeksi usein mietitään omia päivittäisiä töitä ja mietitään että miten jonkin asian saisi hoidettua helpommin ja tehokkaammin. "Uuden tekniikan" työntäminen nenän eteen aiheuttaa minussa kiinnostusta mutta myös vastarintaa.
9. Ensin on tutustuttava tekniikoiden ja toimintatapoihin.
10. Etäyhteydet IBM-ympäristöön Koulutus tietojärjestelmiin Töiden kierto
11. En osaa sanoa.
12. Web3D:n ja virtuaalisen läsnäolon menetelmiä kannattaisi pilotoida ennakkoluulottomasti. Nekin ovat kohta kuitenkin jo vanhentunutta tekniikkaa!
13. Etätyöskentely mahdolliseksi (= etäyhteys omaan työasemaan, ei pelkkä sähköposti). Kankea turvallisuus hankaloittaa teknologioiden seuraamista (downloadausten pyytäminen mikrotuen kautta kömpelöä !?).
14. Kuunnellaan toinen toistamme ja kysytään toinen toisiltamme enemmän. Lapsetkin kysyvät, että miksi? Ei siinä välttämättä tekniikoita alkuun tarvita.
15. nettipuheluita siten, että webcam olisi käytössä myös (esim. Ostravaan ja pohjoismaisiin projekteihin)
16. Fidentassa pitäisi hyödyntää agileja prosesseja, pyrkiä madaltamaan projektioorganisaatiota yhdessä asiakkaan kanssa.

Appendix F.

Appendix F presents the results of the second and third phase of Fidenta's Knowledge Management development project.

SOLUTION	DEMANDS THAT THE SOLUTION ANSWERS	DESCRIPTION OF THE SOLUTION	DESCRIPTION OF THE OPERATIONAL MODEL
Wiki area Prioritization: Very high importance	<ul style="list-style-type: none"> • Need to develop employee possibilities to influence • Need to develop formal information sharing between employees • Need to have an Intranet that has relevant, up to date information • Need to develop experience sharing between employees 	<ul style="list-style-type: none"> • Open wiki pages – publishing rights to everybody (e.g. technical information, reviews and guidelines) • Pages that need moderators approval to be changed • Each wiki page should have metadata that tells from which area it is and search should find all wiki pages or only some area's wiki pages according to the user's decision. • Name of the modifier should be shown in the wiki page • It is important that information is found from one place (links) 	Building a wiki: <ul style="list-style-type: none"> • Make overall structure about wiki areas • Write instructions about building and using of wiki • Deliver the areas to moderators • Moderator plans the structure of the area's main page that has links to wiki • Moderator makes sure that own area includes all needed wiki pages • Moderator divides the work of creating wiki pages to employees • New wiki pages are created freely by all employees • 68 percent of employees of target organization feel that they need instructions to start using wiki
Interactive initiative base Prioritization: Very high importance	<ul style="list-style-type: none"> • Improved ways for idea development • Feedback possibilities • Defining "weak signals" 	ICT solution that is open for everybody in the target organization <ul style="list-style-type: none"> • Initiative form • Initiative base: Combines all employees, commenting and voting possibility • Define the business relevant information that organization wants to have from 	Culture that supports idea generation <ul style="list-style-type: none"> • Systematically applied innovation plan (time, money, commitment) • Innovation team and innovation manager • Employee training • Systematic discussion and use of initiatives by employees, initiative team and managers

		the base.	<ul style="list-style-type: none"> • Logging of hours used for generating ideas • Rewards
Personnel index Prioritization: High importance	<ul style="list-style-type: none"> • More information about colleague competences, responsibilities and work assignments • More effective working because of effective way to find information about colleague competences 	<ul style="list-style-type: none"> • Search that includes all employees and possibility to search by different characteristics • Each person's own page should have personal information: name, title and contact information, vacation, absence • Work information: projects, responsibilities, work assignments, groups, teams, competences • Voluntary information: Blog, Documents, Discussions, Courses, etc. 	<ul style="list-style-type: none"> • It is important that all search criteria are related to each other. • All criteria should work as a link to the chosen area/page. • User should have a possibility to modify his own page in the employee index
Solutions that support projects' life span (Project page, Project workspace) Prioritization: High importance	<ul style="list-style-type: none"> • Need to utilize project's knowledge in other projects. • Transparency: Employees need information about projects in the company 	<ul style="list-style-type: none"> • Execution phase: Project information to project page and project workspace for project group • Closure phase: Project workspace is saved in read-only format and an advertisement booklet is made about successful projects 	<ul style="list-style-type: none"> • It is important that information flows from application to another automatically • Project pages and workspaces should have common building instructions • There is need for a training event for all employees
Sales trigger collecting Prioritization: Middle importance	<ul style="list-style-type: none"> • Sales triggers should be collected and analyzed • Lost cases should be analyzed • Way to order from target organization 	<ul style="list-style-type: none"> • Sales trigger form • Sales trigger base • Create sales case or archive and analyze lost cases 	<ul style="list-style-type: none"> • Target organization's management should utilize the base while going through possible sales cases • It is important that information flows from application to another automatically
Tacit knowledge sharing (Work space, Work partner) Prioritization:	<ul style="list-style-type: none"> • Need to find ways to support tacit knowledge sharing • Development of corporate culture that encourages 	Work space: <ul style="list-style-type: none"> • An inspiring work room for work groups, pairs, teams, customer groups, people in same work assignments 	Work space: <ul style="list-style-type: none"> • Room should have: computers, Open Source software for trying its possibilities, Internet computer,

Middle importance	knowledge sharing	<ul style="list-style-type: none"> For solving problems together, disseminating maintenance knowledge, teaching, orientation, examining new technical solutions, testing <p>Work partner:</p> <ul style="list-style-type: none"> Constant work partner, partner based on demand, Mentoring 	<p>brainstorming equipments, flap boards, inspiring atmosphere</p> <p>Work partner:</p> <ul style="list-style-type: none"> The way to form a work partnership should be clarified (How to get a partner, in which situations is it possible to get a partner)
<p>Virtual World Utilization</p> <p>Prioritization: Middle importance</p>	<ul style="list-style-type: none"> Off shore communication Less traveling needed Environmental aspects More interactive communication 	<ul style="list-style-type: none"> There is need to collect experiences about virtual world utilization in target organization. 	<ul style="list-style-type: none"> Piloting instructions are needed Security issues must be taken to consideration
<p>Sharing of knowledge</p> <p>Prioritization: Middle importance</p>	<ul style="list-style-type: none"> Need to find ways to support tacit knowledge sharing 	<ul style="list-style-type: none"> Sharing of knowledge should be related to processes Encouragement to internal mobility Short “reports” to coffee rooms to encourage discussion Training events 	<ul style="list-style-type: none"> Enrolling possibility to training events
<p>Intranet use activation</p> <p>Prioritization: Middle importance</p>	<ul style="list-style-type: none"> Need to develop experience sharing between employees Possibility to give feedback 	<ul style="list-style-type: none"> Possibility to comment or give feedback among official information Question of the week to company’s intranet User ratings of pages 	<ul style="list-style-type: none"> All pages should include information about responsible persons and possibility to send feedback
<p>Tool page</p> <p>Prioritization: Middle importance</p>	<ul style="list-style-type: none"> More information about tools related to work 	<ul style="list-style-type: none"> All possible tools presented (installing, guidelines, functionalities, experiences) Which projects/ people are using the tools Linked to discussion forum 	<ul style="list-style-type: none"> This could be a wiki based solution Information should be found from one system – links to other places
<p>RSS feed use</p> <p>Prioritization:</p>	<ul style="list-style-type: none"> Information finding should be easy and 	<ul style="list-style-type: none"> RSS feed collects all relevant knowledge to the browser by 	<ul style="list-style-type: none"> Possibility to order the feed or refuse about the feeds

Middle importance	systematic <ul style="list-style-type: none"> • Messages should be allocated only to right persons 	users choices	offered
Workspaces to specific groups Prioritization: low importance	<ul style="list-style-type: none"> • Need for closed workplaces • Need to be in contact with employees over organizational boundaries 	<ul style="list-style-type: none"> • Workspace and discussion areas to groups based on work assignments (modeler, project manager, etc.) 	<ul style="list-style-type: none"> • Right to establish work space • Notification through RSS feed • Workspace naming important

SOLUTION	DEMANDS THAT THE SOLUTION ANSWERS	IMPROVEMENT OF EXISTING SOLUTIONS
Better instant messenger Prioritization: Middle importance	<ul style="list-style-type: none"> • Instant messenger is not working properly and does not support changing of documents between more than two people 	<ul style="list-style-type: none"> • It should support sharing of documents between several people • Training events about the renewal and instant messenger's possibilities • Operational models needed to encourage use • Training needs are researched at the moment
Information accuracy Prioritization: Middle importance	<ul style="list-style-type: none"> • The information in company's Intranet need to be up to date at all time points 	<ul style="list-style-type: none"> • RSS feed collects new information to desktop • New information should be highlighted, and the author and the date of publishing it should be presented
Partner related information Prioritization: low importance	<ul style="list-style-type: none"> • Need for more customer and partner related information 	<ul style="list-style-type: none"> • Information from customer's Intranet should be presented in the target company's intranet • Project kickoff together with customer • Common workshops with customer • Common discussion forums with customer • Better access to partner's intranet (remote desktop connection to computer that has an access)

SOLUTION	DEMANDS THAT THE SOLUTION ANSWERS	EXPERIENCES THAT SHOULD BE GATHERED CONCERNING POTENTIAL TOOLS
Web 3.0 Prioritization: Middle importance	Meetings, diminishing travel costs, training possibilities, teamwork with customer, ways to support tacit knowledge sharing	<ul style="list-style-type: none"> • WEB 3D (Exploiting virtual world at work)

Open source software and open innovation Prioritization: Middle importance	Diminishing software costs and idea development costs, nearness to customer	<ul style="list-style-type: none"> Utilizing open source software Open innovation with customer
Remote connection and Skype use Prioritization: low importance	Remote work possibilities Intranet needs to be accessed outside More effective communication	<ul style="list-style-type: none"> Electrical working spaces that can be accessed through remote connection (phone, computer) Using of Skype instead of phone, accessing Intranet through phone
Training Prioritization: low importance	Training at the right time	<ul style="list-style-type: none"> Ad-hoc training

SOLUTION	DEMANDS THAT THE SOLUTION ANSWERS	DESCRIPTION OF THE OPERATION MODEL
Related to all solutions Prioritization: Very high importance	<ul style="list-style-type: none"> This is a list of necessary operational models to make sure that the solutions will be successful in the target organization 	<ul style="list-style-type: none"> Planned way to start using solutions is needed Usability of the new solution is better than the usability of previous solutions There should be no competing solutions Employees should be informed, encouraged and trained to use the solutions There should be moderators that are in charge of the solutions Systematical use of the information got from the solutions is important Mindsets of corporate managers should support the use of the new solutions There should be some control but it should not block sharing of knowledge and emergence of initiatives
Instant messenger use Prioritization: High importance	<ul style="list-style-type: none"> All employees should use instant messenger for short conversations that do not need to be saved To be able to show the own status in the work spaces 	<ul style="list-style-type: none"> Better instant messenger is needed (sharing of documents between several people) Training event is needed about the renewal and instant messenger's possibilities
Calendar use Prioritization: High importance	<ul style="list-style-type: none"> Appointment should always be made through Outlook 	<ul style="list-style-type: none"> Campaign about correct calendar use and about bringing it up to date Everybody should give access rights to the own calendar
Discussion forum use	<ul style="list-style-type: none"> Discussion forum is not used 	<ul style="list-style-type: none"> Discussion forum should have another name and the forum should be linked to company's

<p>Prioritization: Middle importance</p>	<ul style="list-style-type: none"> • Need to find ways to support knowledge sharing 	<p>intranet.</p> <ul style="list-style-type: none"> • Everybody should be registered in the forum. • Well defined division between information that should be in discussion forum or in company's intranet is needed.
<p>Intranet's information should be understandable</p> <p>Prioritization: middle importance</p>	<ul style="list-style-type: none"> • Technical shortages explained, more pictures 	<ul style="list-style-type: none"> • Information should be found from one system – links to other places having related information
<p>Management blog</p> <p>Prioritization: low importance</p>	<ul style="list-style-type: none"> • Blog writing should be possible in Intranet 	<ul style="list-style-type: none"> • How is in charge of the writing • How often the information is published • Is a blog a formal information channel?